

Electrical Apparatus.

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CLAUDIUS ASH, SONS & CO., Ltd.,

5 to 12, BROAD STREET, GOLDEN SQUARE,

LONDON, W.

ADDRESS FOR TELEGRAMS: FRENES, LONDON.
TELEPHONE NUMBER: 420 GERRARD (4 LINES).

ASH'S TOOTH POWDER.

The materials of which our Tooth Powder is composed are of the purest quality and such as are generally recommended by the best authorities.

It is known as No. 2 Fine, and is flavoured with Oil of Bergamot and Otto of Roses.



Put up in 1-lb., $\frac{1}{2}$ -lb., and $\frac{1}{4}$ -lb. tins, as here illustrated. These tins do not bear our name, and are therefore suitable for supplying to patients, either as received from us or with the Dentist's label upon them.

	s. d.
In any size tins	per lb. 4 0

A discount of 10 % is allowed off 5 lbs.; 15 % off 15 lbs.; 20 % off 30 lbs.; 25 % off 50 lbs.



22501332858

ELECTRICITY IN DENTAL PRACTICE.

POINTS WORTH NOTING.

THE extensive increase in the number of Electric Supply Companies during recent years, and the consequent demand for suitable apparatus to be worked by the electric current in the dental surgery and workroom, have led manufacturers of electrical appliances to study the needs of the Dentist, and to place before him a number of labour- and time-saving appliances, the use of which he will find profitable in practice.

In addition to ordinary lighting purposes, the current supplied can now be used for small lamps for illuminating the patient's mouth, both for examination and for general operations during dark weather and in the evening; for driving small motors for dental engines, operating and workroom lathes, ventilating fans, and electric mallets; also for heating furnaces, gold-annealers, water-holders, sterilisers, cauteries, root-driers, hot-air syringes, etc. The general employment of electricity will be found most useful and economical, and, as already intimated, **any ordinary lighting supply** can be utilised for the above-mentioned apparatus.

Nearly all Supply Companies charge electric current to consumers at two different rates—one for all forms of lighting, and the other for power and heating. A separate meter and wiring are necessary for each supply. The cost of the current for power and heating is usually from one penny to threepence per Board of Trade unit. From this supply all dental apparatus, other than Reflectors, can be worked. It is therefore economical to have separate wiring for all forms of motors and for heating apparatus, for which free use of the current is necessary.

Electricity for heating apparatus has many advantages over gas. It does not give off fumes or consume the oxygen from the atmosphere, so especially noticeable when gas is used in small surgeries and workrooms, consequently the general surroundings are more healthy, and the risk of fire is greatly reduced; further, as the current can be switched on and off at will, there is no waste, as with gas, in burners which are left constantly alight ready for use when required.

There are two kinds of supply—the **alternating**, and the **continuous** (or direct) current. They are not easily distinguished when used for lighting or heating, and serve equally well for these purposes, but for driving motors it is very necessary for the Dentist to know whether the

current at his command is **alternating** or **continuous**. Both currents are supplied at a certain pressure (or electro-motive force), usually from 100 to 120, or 200 to 250 volts, therefore all apparatus, lamps, etc., must be of the same voltage as the current supply to be used. In addition to different voltages, the **alternating** current also varies in another way, viz., in the number of alternations, periods, or cycles per second (or minute). This may be anything from 40 to 100 cycles per second, and is generally known as the periodicity of the current. It is, therefore, **very important** for each **alternating** current motor to be wound for the same number of cycles as the current on which it is to be used. This information can always be obtained from the office of the Electric Supply Company of the district.

Electric Engines.—A motor for driving the engine is usually the first electrical appliance adopted by the Dentist, as the amount of labour saved by its use is undoubtedly very considerable in a busy practice, to say nothing of the comfort it affords, and its convenience over a foot engine. It is only necessary to give a motor a few days' trial to realise its many advantages, and we are confident that, once tried, no Operator would wish to return to his foot engine. The best modern motors, as shown in this list, are thoroughly reliable, and may be worked satisfactorily without the Operator having any knowledge of electricity. All that is required, as a rule, to maintain them in good condition is to keep the commutator clean and smooth, and to apply a little good oil occasionally to the bearings. With ordinary care they will last for years. The most popular forms are those which can be fixed to the window-frame or wall, within easy reach of the Operator, as they do not occupy valuable floor space, or in any way interfere with the free use of spittoon, bracket table, lamp, etc. Electric engines can now be supplied to work equally well on either **alternating** or **continuous** current, and are supplied to work from any pressure up to 250 volts.

Electric Lathes.—The most popular form of Electric Lathe is that which has the armature spindle extending about one inch from the bearings on each side of the motor, on which the wheel or brush chucks are fixed. This arrangement admits of the wheels, brushes, etc., being driven direct from the armature, without loss of power such as arises from the use of a pulley and driving belt when a separate lathe-head is used.

In laboratories in which more than one lathe is required, it will be found more economical and convenient to use separate lathes of this description than to buy one large motor and to erect shafting for driving ordinary lathe-heads by belts.

Electric Fans for both surgery and workroom add greatly to the comfort of both patient and Operator in hot climates, and during hot weather in temperate climates.

Electric Annealers.—Annealing gold for fillings by electricity has been proved to be the most perfect method, inasmuch as it ensures every particle of the metal being equally heated, and is quite free from fumes.

Moreover, the heat is easily regulated with a small resistance, by means of which different temperatures can be obtained.

Electric Caутery, Root-Drier, Hot-air Syringe, Mallet, and Mouth-examining Lamp.—This class of apparatus is only intended for very low pressures, and must on no account be connected direct to main current supplies without a suitable resistance or transformer. The pressure required, as a rule, varies from 2 to 10 volts, and the current is anything up to 8 or 9 amperes. When an alternating current is used this is readily obtained, with very little loss, through a suitable transformer. When a continuous (or direct) current is used the main pressure can be reduced by means of a resistance; or small accumulators, which can be charged from the main current supply, may be used with satisfaction. The former supply, however, is generally preferred, as with it Operators have no need to trouble about watching the accumulators to prevent over-charging or under-charging, either of which is detrimental to the accumulator plates.

Distribution Boards.—Now that so many different electrical appliances are used in well-equipped operating rooms, some form of convenient distribution of the current supply has become necessary. We have therefore designed Distribution Boards from which any electrical apparatus used can be conveniently and satisfactorily supplied with current from a common centre. With the use of one of these Boards, wiring and fixing of wall-plugs are reduced to a minimum; one heavy pair of main wires, preferably from a separate "Power" meter to the Board, is all that is necessary. The Boards have each full-pressure and low-pressure circuits. From the full-pressure circuit all appliances made for the same voltage as the supply main are worked from suitable plugs; and from the low-pressure circuit low-voltage appliances, such as are mentioned in the above paragraph, are worked direct from the main, through a suitable resistance, either fixed behind the Board or away from it and connected to it by suitable wires.

Electric Furnaces.—These have very largely superseded gas and coke furnaces wherever the electric current is available. They are now made in a large variety of patterns and sizes, and many of them are suitable for firing the highest-fusing porcelain bodies and gum enamels.

Dentists who have not the advantage of a main current supply can at small cost provide themselves with a very satisfactory generating outfit, as described in this list, which will be found worthy of consideration.

We shall at all times be pleased to give the fullest information we can to intending purchasers in regard to electrical apparatus, and as to which is the most suitable for the current to be used. In making inquiries the **voltage** of the supply should always be stated, and also the **periodicity** if it is an alternating current.

All prices in this list are subject to market fluctuations.

CLAUDIUS ASH, SONS & CO., Limited.

COLUMBIA ELECTRIC ENGINES.

This well-known make of Engine is supplied in three different forms, both for **alternating** and for **continuous** current. We have had considerable experience with all of them during the last few years, and have always found them so thoroughly reliable that the Dentist does not require to keep a foot engine always ready at hand in case of a breakdown. They will bear the closest expert examination, and fully justify the manufacturers' claims for high quality, efficiency, and finish.

The **alternating** current Engines are worked in the same manner as those for **continuous** current; they can be started and stopped instantaneously, have similar speed regulators, and are undoubtedly the most perfect engines, for this kind of current, at present in the market.

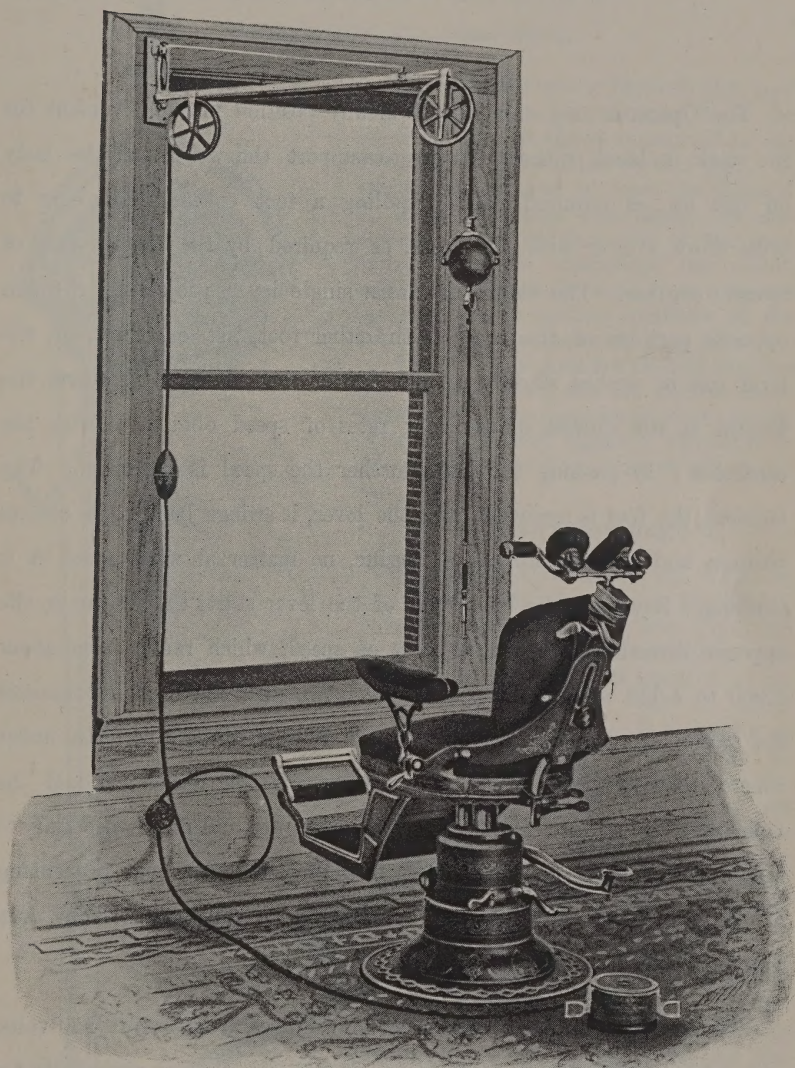
From the three entirely different types in which the Engines are supplied for both **alternating** and **continuous** current, it is possible to meet the taste of almost every Dentist. The Suspension type is the original, and still the favourite form, and is supplied with either Flexible Cable Arm or "All-Cord" Arm. The Wall "All-Cord" is supplied to meet the needs of those who do not like the suspension bracket. The "All-Cord" Arm Engines are generally preferred to those with the flexible cable arm, because they give a steady, regular cut to the bur without back-lash.

The motor of each type is perfectly enclosed in a pair of oxidised metal cups, thoroughly dust-proof, and is well insulated from the handpiece, to protect both patient and Operator from shocks. Beyond occasional oiling and cleaning of the commutator, no attention is necessary to keep it in perfect working order.

The same style of foot controller is used with each form of Engine, both for alternating and continuous currents. It starts, regulates, and stops the motion; it is portable, and can be easily moved anywhere round the base of the chair.

COLUMBIA ELECTRIC DENTAL ENGINE.

C.S. TYPE.



The illustration shows clearly how the Engine is suspended in relation to the Chair, and also the best location for the foot controller.

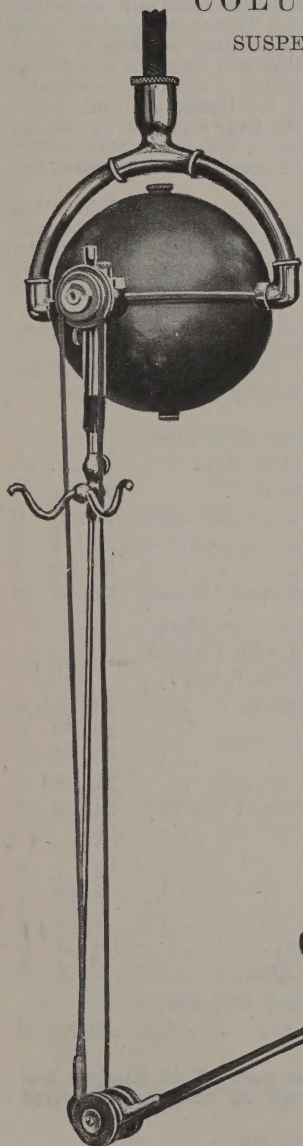
COLUMBIA ELECTRIC ENGINES—*continued.*

The Operator may stand or sit in any position most convenient for the work in hand, without having to support the weight of the body on one leg, as required while treadling a foot engine, or having to press down a lever with the other, as required by the older forms of electric engines. The controller has a single lever projecting through opposite portions of the case; with either foot, flat on the floor, the lever can be pushed slightly to one side or the other. This starts the Engine at the slowest of the four rates of speed obtainable with the controller; by pushing the lever further the speed is increased. The moment the foot is removed from the lever, it swings back to its central position and instantly stops the Engine, no matter at what speed it is running. Reversing the movement of the lever starts the Engine in the opposite direction at the same rates of speed, which range from about 1,000 to 4,000 revolutions per minute. The manufacturers recommend the swing lever, on the ground that the Engine is more perfectly under control than it is with a spring-catch lever, for this reason: should the Operator move a short distance from the controller, and find it necessary to stop the Engine quickly, time is lost in finding the lever and preventing an accident, which with the swing lever could be prevented without even glancing away from the work.

The Motors are wound suitable for all voltages, from 100 to 250 volts, either for Continuous or Alternating current, also for any periodicity for Alternating current.

THE LATEST PATTERN
COLUMBIA ENGINE.

SUSPENSION ALL-CORD TYPE.



The only difference between this new Engine and the one on page 5 is the All-Cord Arm, as shown connected to the motor in the illustration on this page. It has been introduced to meet the demand of those Operators who prefer the suspended motor, which is out of the way, hangs ready for immediate use within easy reach, and at the same time possesses the very steady cutting qualities of the All-Cord Engine shown on page 9.

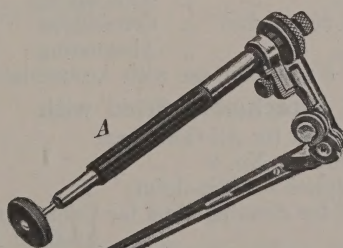
The All-Cord Arm for electric Engines is fast superseding the old flexible cable and sheath, as the smoothness of its cutting qualities is so very apparent, especially to the patient, when large burs or wheels are used.

For prices see page 8.

The illustration shows the All-Cord Arm fitted with the Doriot Handpiece. This Handpiece has lately been improved. It is very simple in construction, and there are no delicate parts about it to get

out of order.

It is known as the Doriot Handpiece No. 3. It is less weighty than Handpieces with Slip-Joint, but if desired the Engine can be fitted with the Doriot



Wrist Attachment and No. 2 Slip-Joint Attachment. All existing Handpieces, Angle Attachments, and Engine Mallets can readily be obtained to fit the No. 2 Slip-Joint, or those at present in use on foot engines can be adapted to fit it.

COLUMBIA SUSPENSION TYPE ENGINE—*continued.*

The illustration on page 5 shows the Motor, with flexible cable arm, suspended by its own connecting cord from a neat oxidised bracket fixed to the window-frame, 8 feet from the floor. No polishing is required; daily dusting will keep it clean. In this position it is well out of the way of both patient and Operator, and also of any stands, brackets, etc., which may be near the chair; it occupies no valuable floor space, but hangs in a convenient position ready for immediate use. When finished with, it is only necessary to draw the handpiece away from the mouth and to leave go of it, for the arm to hang vertically in front of the chair, always within easy reach of the hand; or, if desired, the Motor and bracket can be pushed flat against the wall.

The Motor is counterbalanced by a suitable weight, which runs up and down the wall underneath the bracket. This allows the Operator to raise or lower it by the slightest movement of the hand, with no more weight to support than the handpiece which he holds; it thus gives perfect freedom and universal movement. Suspended in this way, there is not the slightest vibration or rattle, the Motor runs quite silently.

The wall bracket is fitted with a telescopic rod, which allows a range of from 3 to 4½ feet from the wall to the front pulley.

This type of Engine is also supplied fitted with the All-Cord Arm in place of the Flexible Cable Arm. For remarks on the All-Cord Arm see pages 4 and 7.

Suspension Type Engine, as illustrated on page 5, complete to end of cable and sheath, minus handpiece, etc.:

	£	s.	d.
No. 1, for 100 to 120 volts Continuous current . . .	22	0	0
" 2, " " " Alternating " . . .	25	0	0
" 3, for 200 to 250 " Continuous " . . .	23	4	0
" 4, " " " Alternating " . . .	26	0	0
" 5, for 4 to 6 volts, for use with Accumulators or Battery	21	0	0

Suspension All-Cord Type Engine, same pattern as above, but fitted with All-Cord Arm instead of with Flexible Cable Arm, minus handpiece, wrist attachment, etc.:

No. 11, for 100 to 120 volts Continuous current . . .	24	0	0
" 10, " " " Alternating " . . .	26	0	0
" 15, for 200 to 250 " Continuous " . . .	25	4	0
" 12, " " " Alternating " . . .	27	0	0
" 13, for 6 volts, for use with Accumulators or Battery	24	0	0

Doriot Wrist Attachment fitted with

No. 2 Slip-Joint for All-Cord Arm	2	1	8
Doriot Handpiece No. 3	2	18	4
No. 7 Handpiece for Slip-Joint	1	14	4
Wire Wheel for cleaning Burs for Cable Arm	0	3	0
" " " " All-Cord Arm	0	4	0

Engine with metal parts and Bracket oxidised Old-Silver finish	extra	0	16	0
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A special discount of 10 per cent. is allowed for cash off all Engines and such accessories as are ordered with them, but not off accessories ordered separately.

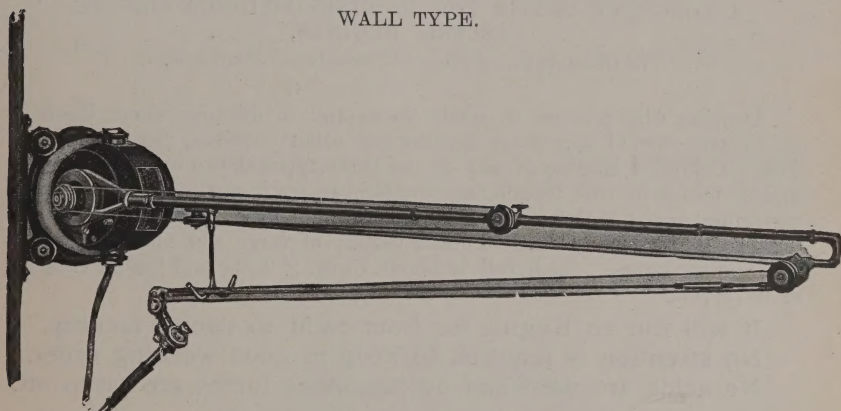
For Engine Battery see page 10.

Prices of Handpiece, etc., for Columbia Engines with
flexible cable arms—Nos. 1 to 5, page F 8:—

	£	s.	d.
Flexible Wrist Attachment	0	7	6
No. 7 Handpiece	1	9	0
Ash's Slip-Joint, complete	1	0	0
No. 2 ,, ,, 	1	0	0
Wrist Attachment with either Ash's or No. 2 Slip- Joint, minus dog and ferrule	1	3	0
No. 2 Right Angle for Slip-Joint	1	5	0
Contra Angle ,, ,, 	1	13	4
Engine Wall Bracket and Pulleys, Nickel-plated instead of oxydised extra	0	6	6
,, ,, Silver oxydised ,,	0	13	0
,, ,, Copper ,, ,,	0	8	6

COLUMBIA ALL-CORD ENGINE.

WALL TYPE.



The chief advantage of an All-Cord Engine, in which the driving belt passes over a pulley on the back-end of the handpiece, is the entire absence of the so-called back-lash, or unsteadiness of the motion of the bur, which is driven with perfect regularity, regardless of pressure.

The driving cord, if properly fitted, never touches any portion of the arm, no matter in what position the handpiece is held; disagreeable noise, friction, and wearing of the cord are thus prevented. The arm is supported from the Motor bearings by means of an adjustable friction device, which permits of a vertical movement of about 3 feet. The illustration shows the arm lowered ready for use and fitted with the telescopic extending device, by means of which the arm can be extended about 12 inches without altering the tension of the cord or clamping screws. When not in use the arm can be pushed up out of the Operator's way.

Some Operators prefer this Wall-Type Engine fitted with the short double arm shown on the Suspension Engine on page 7. This is fitted in place of the above single long arm to which the handpiece is attached, and is suspended from the double pulley joint on the end of the long telescopic arm. *Price 40s. extra.*

To the patient the use of the All-Cord Arm is far more agreeable than any other, because of the very regular and steady motion of the bur.

The same foot controller is used as is illustrated on page 5.

For **Continuous Current**—

	£	s.	d.
No. 17, for 100 to 120 volts, without Handpiece or Wrist Attachment	23	0	0
„ 21, for 200 to 250 volts	24	4	0
„ 19, for 6-volt Accumulators or Battery	23	0	0

For **Alternating Current**—

	£	s.	d.
No. 14, for 100 to 120 volts, without Handpiece or Wrist Attachment	25	0	0
„ 16, for 200 to 250 volts	26	0	0

The prices of Handpieces, Wrist Attachment, etc., are the same as those given on page 8 for the Suspension All-Cord Engines.

Wire Wheel for cleaning Burs, to fix on to the vulcanite pulley of arm nearest to Motor	0	6	0
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When ordering for Continuous current, state **Voltage** to be used; for Alternating current, state **Voltage** and **Periodicity**.

For Cash Discount see page 8.

PRIMARY BATTERY.

A LONG-LIFE OUTFIT FOR DRIVING COLUMBIA DENTAL
ELECTRIC ENGINES,

In Districts where Electric Power is not obtainable.

Dentists who practise in small towns and in districts where there is no electric current supply for lighting and other purposes, can be supplied with a Columbia Engine of any of the three types shown on pages 5 to 9, and by means of this thoroughly reliable battery it can be run with equal power and speed to those driven by electric lighting circuits.

The Battery is a Caustic Potash battery of large size and capacity—600 ampere-hours. Each cell is about 15 in. $\times$ 9 in., and has an E.M.F. of 0.75 volt.

It will run an Engine for from eight to twelve months.

No attention is required to keep in good working order.

No acids are used and no poisonous fumes are given off.

The cells consist of strong porcelain jars fitted with covers, in which the metal terminals and contacts for the internal plates are fixed. The elements consist of zinc and copper-oxide plates, with a solution of caustic potash and water, covered with a special oil to prevent the liquid from evaporating.

After the cells have been charged and properly connected-up, no further attention is required until the Battery runs out. One charge will run an Engine in average use for from eight to twelve months; it has been known to run one for from eighteen to twenty months in some practices.

When the Battery runs out the plates are generally used up, and the whole of the contents of the cells require to be renewed. The cells can readily be cleansed and re-charged with a set of renewals which we supply. No action takes place in the Battery when the Engine is not in use.

Eight cells only are required for the 4-volt Cable Arm Engine, and ten cells for the All-Cord Arm 6-volt Engine, if the Battery is located near the Engine; should it be some distance from the Engine, one or two extra cells will be required to obtain full power.

Thick insulated copper wires must be used for connecting the Battery to the Engine, three separate wires being required. When ordering a Battery, state what the distance will be from it to the Engine. The Battery should be placed as near to the Engine as possible, and the measurement should, of course, be made round the walls of the room where the wires will be fixed.

This Primary Battery can also be used for working the Electric Mouth Lamp, Cautey, Root-Drier, and Hot-Air Syringe.

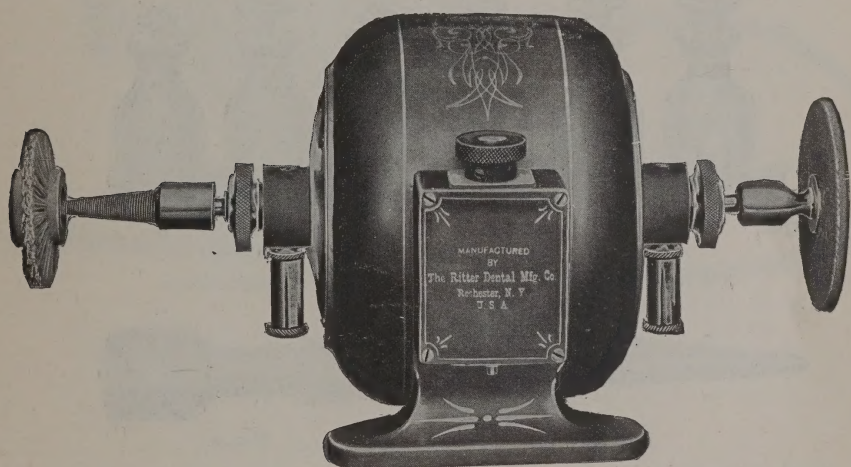
	£	s.	d.
Battery of Eight Cells for driving 4-volt Cable Arm Engines	8	0	0
„ Ten „ „ 6-volt All-Cord Arm „	10	0	0
Renewals, complete sets per cell	0	11	6
Regulating Resistance for Mouth Lamp, Cautey, Root-Drier, and Syringe from	2	2	0

COLUMBIA ELECTRIC LATHE.

FOR USE IN THE DENTAL LABORATORY OR SURGERY.

This Lathe, which is made by the Ritter Dental Manufacturing Company, is undoubtedly the best in the market of its kind. It is specially designed for Dentists, and admirably meets their requirements.

It is supplied in two forms, Continuous and Alternating, to work direct from ordinary lighting or power circuits with pressures of from 100 to



250 volts, and, as regards the Alternating, to suit any periodicity. Each Lathe is provided with a four-speed regulating switch with circular button on top, which is shown in front of the illustration. The speeds range from 1,000 to 3,000 revolutions per minute; each possesses ample power for dental work; the motor gives one-sixth horse-power.

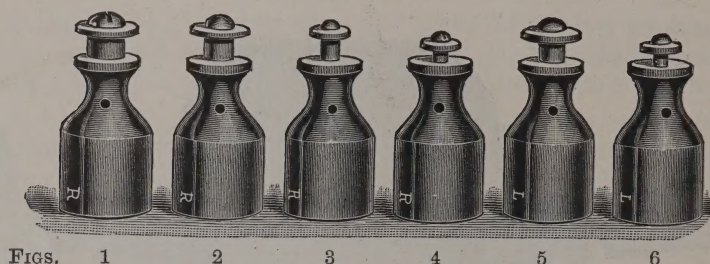
The bearings are constructed to give very long life to the Lathe, and as the parts are interchangeable they can be renewed when necessary; the Lathe can thus be kept in first-class working order. The chucks are fitted direct on to the armature spindle, the ends of which are slightly coned; there is no screw-thread on them; the chucks are simply pushed on the spindle. This gives them a perfectly secure hold, and there is practically no wearing down of the spindle during years of use.

COLUMBIA ELECTRIC LATHE—*continued.*

Every part is well designed and thoroughly well made; the case is perfectly dust-proof, tastefully enamelled, and gives the whole apparatus such a neat appearance that it will be found to harmonise with other highly finished apparatus in the best appointed operating room.

The Lathe has sufficient weight to resist the tendency to move when heavy grinding or polishing is being done; it will therefore stand on any bench without fixing. Both commutator and switch are free from destructive sparking.

Lathe Chucks for Wheels.



For Brushes and Felts.

For Engine Burs.



FIG. 7.

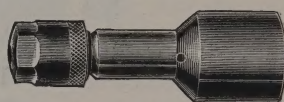


FIG. 8.

The eight chucks shown above are the regular patterns supplied with each Lathe. Nos. 1 to 6 are for Corundum or Carborundum Wheels as supplied by us, and are made with three different size hubs. Each size is made for either the right or left side of the Lathe, stamped R and L respectively. The screws which fix the wheels are threaded so that they always tend to tighten while running. No. 7 is for Brushes, and can be had with right or left screw cone. No. 8 is for Engine Burs, Drills, etc.

Other useful chucks are supplied to carry our vulcanite-cutting steel Burs and Wheels, also for carrying Emery Cloth Bands—see next page.

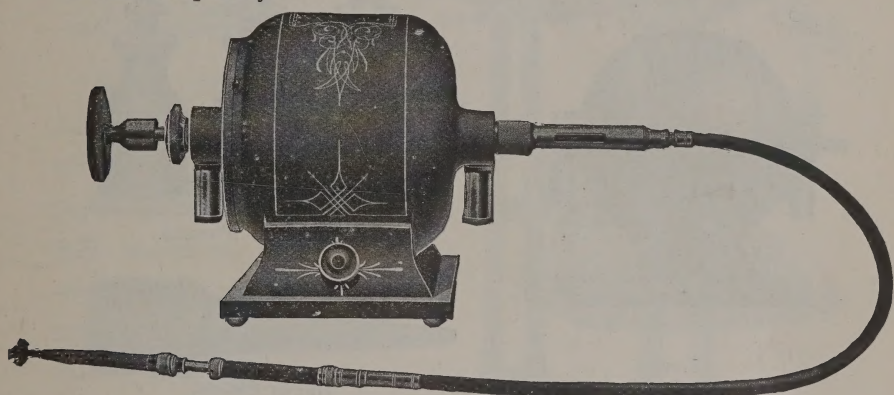
When the Lathe is required for use in the Surgery, we recommend our polished wooden tray, which is fitted with a pair of neatly japanned zinc troughs, similar to, but of larger size than those shown in Fig. 3 on page 16.

COLUMBIA ELECTRIC LATHE—*continued.*

The Lathe is shown below fitted with a flexible cable arm and handpiece. This arm is particularly useful to crown and bridge workers, and also to those who have much fine-fitting to do. Such kinds of work can be done more accurately with a suitable wheel in the handpiece which can be moved round the work in any position and at any angle, than is possible by moving the work around and about a revolving wheel which is fixed on a rigid spindle.

The illustration shows the old form of Lathe and Arm. An improved attachment is now supplied, which is slipped on or off the spindle in the same manner as a wheel chuck; no adjusting is required.

Any old foot engine cable arm can be used if fitted to the attachment, which can be obtained separately.



	Continuous Current.	Alternating Current.
	£ s. d.	£ s. d.
Lathe complete with set of 8 Chucks :		
For 100 to 120 volts	8 16 0	12 0 0
„ 200 to 250 „	10 0 0	13 0 0
„ 6 to 8 volts, for use with Accumu- lators or Battery	8 16 0	—
<i>Any form without Chucks, 16s. less; but if less than the full set of chucks is ordered, they will be charged at the single rates.</i>		

	£ s. d.
Wheel Chucks each	0 1 6
Brush „ all Brass „	0 4 0
„ „ with Steel screw cone „	0 5 6
Bur „ „	0 10 0
Chuck for Vulcanite Burs and Wheels „	0 7 6
Attachment for Flexible Arm „	0 14 6
Attachment with Flexible Arm and No. 7 Handpiece „	3 3 6
Polished Wooden Tray and two Splash Troughs . . .	1 7 6
Chucks to carry Emery Cloth Bands	0 6 6
Emery Cloth Bands in boxes of 50	0 1 1
„ „ 500	0 7 6

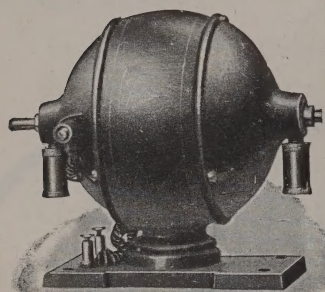
A special cash discount of 10 per cent. is allowed off these Lathes and any accessories ordered with them, but not off accessories ordered separately.

ASH'S SIMPLE ELECTRIC LATHE

FOR LABORATORY USE—ONE-TENTH HORSE-POWER.

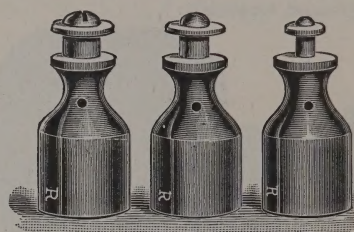
These Lathes meet the demand for good, reliable, and cheap Electric Lathes. To those Dentists who have a busy practice, and require an electric lathe which will stand heavy polishing and long-continued service, we recommend the Columbia Lathe—see page 11—as the best and cheapest

FIG. 1.

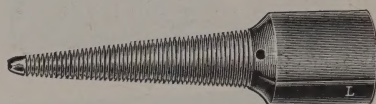


LATHE.

FIG. 2.



CHUCKS FOR WHEELS.



BRUSH CHUCK.

in the end; but for those with a practice of moderate or small size these less expensive Lathes will do all that is necessary both for polishing and grinding.

Illustration Fig. 1 shows the Continuous-current Lathe; the one for Alternating current is slightly different in shape.

The Chucks for Wheels shown in Fig. 2 are of three different sizes, and will take our stock sizes of Carborundum or Corundum Lathe Wheels; the Brush Chuck will take Brushes and Felt Wheels and Cones.

The chucks are fitted direct on to the armature spindle, which extends about one inch from the bearings on each side, as shown on Fig. 3, page 16.

To the base of each Lathe a pair of terminals is fitted to which flexible wires are attached leading to any wall plug or lamp-socket plug. When the current is switched on, the motor starts off immediately at full speed. If lower speeds are required for grinding, etc., a separate regulator is supplied, which can be fixed in any convenient position—on the wall nearest the Lathe, or underneath the bench.

For **Continuous** current the Lathes are made for any pressure of from 100 to 250 volts.

For **Alternating** current the Lathes are made for any pressure of from 100 to 250 volts. They are stocked for from 40 to 50 cycles, and made to order for currents of from 60 to 100 cycles.

Each Lathe is fitted with two self-feeding oil cups.

FIG. 4.

ASH'S SIMPLE
ELECTRIC
LATHES
LABORATORY
FOR SURGERY USE.

Fig. 4 shows the Lathe, Fig. 1, page 14, on wooden tray, with regulating resistance **SR** underneath, zinc troughs over polishing brush, and water apparatus with sponge against the grinding chuck, fitted on black japanned iron stand.

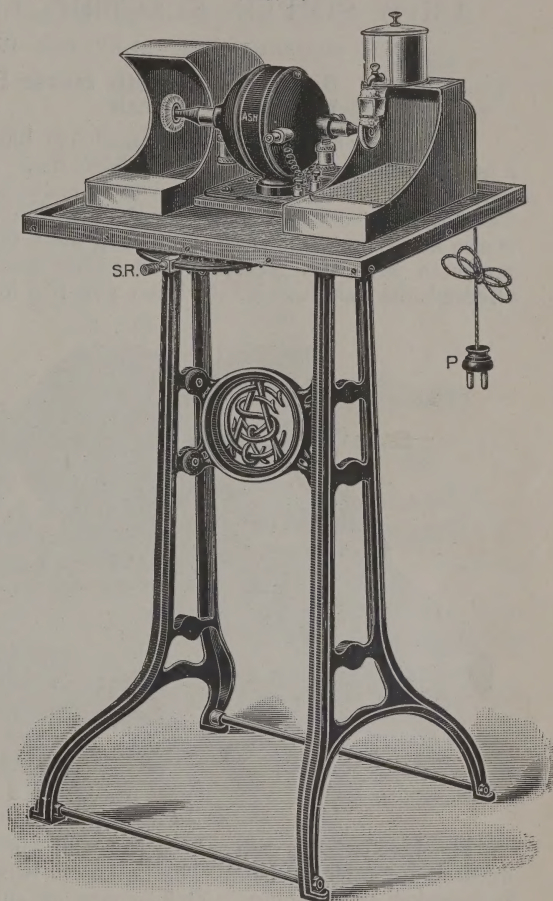


Fig. 4. One-tenth-H.P. Lathe, complete on stand, as illustrated, with Troughs, Regulator, and four Chucks, minus wheels and plug, 100 to 120 volts

	Continuous.	Alternating.
	£ s. d.	£ s. d.
100 to 120 volts	7 5 0	8 5 0
200 to 250 „	7 12 6	8 12 6
<i>Parts separately :</i>		
Speed Regulator	each	0 12 6
Wheel Chucks, right or left side, as Fig. 2, p. 14	„	0 3 3
Brush „ all Brass, right or left side, as Fig. 2, p. 14	„	0 3 3
„ „ with Steel screw cone	„	0 5 6
Bur „ for Engine Bits	„	0 10 0
Japanned Iron Lathe Stand	„	1 10 0
Pair of large Zinc Troughs for Laboratory use	„	0 18 0

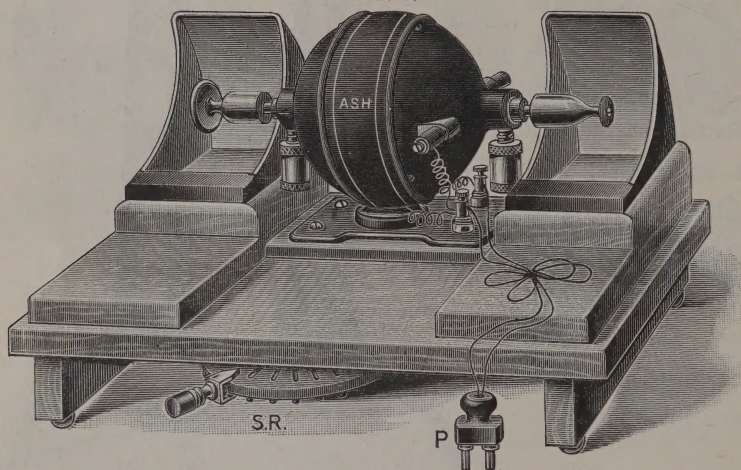
ASH'S SIMPLE ELECTRIC LATHES—*continued.*

FOR SURGERY USE—SUPPLIED IN TWO SIZES.

Small size, 1/20th Horse-Power.**Large „ 1/10th „**

Illustration Fig. 3 shows the Small-size Lathe fitted up complete on a neat polished wooden tray for surgery use. As a rule, light grinding only is done in the surgery, hence the Small-size Lathe will generally be found to give sufficient power for the surgery; but the Large-size Lathe is also fitted up in the same manner, to meet the needs of Operators who prefer to have the greater power which may sometimes be required, although the small size is sufficiently powerful for average work.

FIG. 3.



LATHE OUTFIT.

The base is fitted with rubber feet, and will stand firm without being fixed on any table or shelf. The Lathe can be worked from any ordinary lamp-socket or wall-plug. The amount of current used is exceedingly small.

Small Size:

	Continuous.			Alter-nating.		
	£	s.	d.	£	s.	d.
Lathe only, as Fig. 1, page 14, 100 to 120 volts, each	2	12	6	3	10	0
„ „ „ „ 200 to 250 „ „	2	18	0	3	18	0
„ Outfit complete as Fig. 3, with 3 chucks, but minus wheels and plug, 100 to 120 volts, each	4	15	0	5	12	0
„ Outfit „ „ 200 to 250 „ „	5	0	0	6	0	0

Large Size:

Lathe only, as Fig. 1, page 14, 100 to 120 volts, each	3	10	0	4	10	0
„ „ „ „ 200 to 250 „ „	3	17	6	4	17	6
„ Outfit complete as Fig. 3, with 4 chucks, but minus wheels and plug, 100 to 120 volts, each	6	5	0	7	5	0
„ Outfit „ „ 200 to 250 „ „	6	12	6	7	12	6

For separate prices for accessories see page 15.

SIMPLE GILDING APPARATUS.



DRY CELL WITH DENTURE AND
GOLD ANODE.

BURNER WITH HEATING PAN AND PORCELAIN BATH.

The Simple Gilding Apparatus here illustrated will be found most valuable for imparting a pure gold surface to full or partial metal dentures, bridges, and other articles.

There is very little trouble attending its use. The gilding solution is easily and quickly prepared, the dry cell lasts for a long time, and the results are pleasing to both Operator and patient.

A gold plate is improved in appearance by gilding, inasmuch as the solder is hidden, and patients prefer a platinum, or dental alloy or palladium alloy of gold colour, at a small additional cost.

**Printed Directions for using the Apparatus are given
on each Dry Cell.**

Gilding Outfit complete, with one dry cell, 2-oz. bottle of cyanide of potassium, porcelain bath with heating pan, gas burner, coil of fine copper wire, insulated conductors, and wire scratch brush	£	s.	d.
	0	12	6
Ditto, ditto, minus gas burner	0	11	0
Pure gold anode with platinum wire conductor . . .	1	10	0
Extra cells with insulated conductors each	0	3	0
Gilding Solution for gilding small pieces, etc., without any battery per bottle	0	5	3

ASH'S RESISTANCE, TRANSFORMER, AND DISTRIBUTION BOARDS.

Our chief aim in introducing the Boards, Figs. 1 to 5, shown on the following pages, is to provide a low-pressure circuit for the use of small Mouth Lamps, Cautey, Root-Drier, Gutta-Percha Instruments, Hot-Air Syringe, etc. These appliances usually require a current varying from 2 to 12 volts, with an amperage of from 1 to 8 amperes. In the past they have, as a general rule, been heated by means of accumulators, which require too much attention for busy Operators to keep in satisfactory working order.

We provide this low-pressure circuit by employing suitable Resistances where a Continuous current is used, and Transformer Coils where an Alternating current is used. These are fitted permanently to the Boards, and require no attention to keep in order. By these means a suitable current is always available.

To increase the usefulness of the Boards, the larger of them, Figs. 3 and 5, are each provided with six two-pin plugs. These are separate from the Resistance or Transformer circuits, and give the full voltage of the main supply. They convey the necessary current for working Engine, Lathe, Fan, Gold Annealer, Furnace, Steriliser, all forms of Water Heaters, Foot-Warmer, etc.; in fact, any apparatus which is made to work from the voltage of the main current supply.

No modern operating-room is considered up-to-date without some form of Distribution Board. These Boards possess ample accommodation for working all electrical apparatus, and for any additional appliances which may be added later. They thus save the expense, trouble, and annoyance of fitting extra wall-plugs, which is so often necessary in the absence of a Board when new apparatus is taken into use.

The Boards are usually supplied in Black Enamelled Slate, which always look neat. They are perfectly fireproof, and with ordinary care cannot get out of order. They can be had in white marble to order.

ALTERNATING CURRENT TRANSFORMERS.

FOR ELECTRIC MOUTH LAMP, CAUTERY, HOT-AIR SYRINGE, ROOT-DRIER, Etc.

FIG. 2.

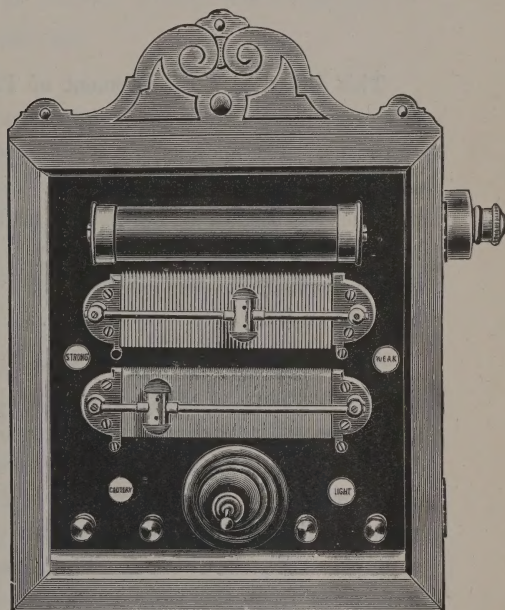
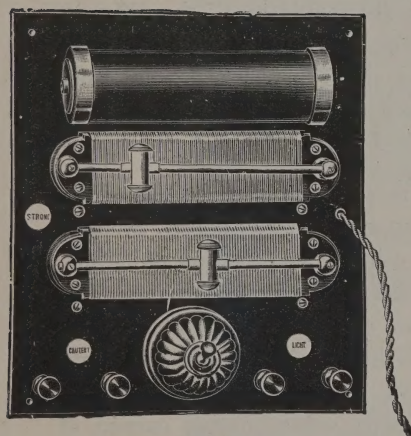


FIG. 1.



An Alternating current is reduced by means of a Transformer much more economically than a Continuous current is by means of a Resistance.

The above Transformers are recommended to all Dentists, who have an Alternating current supply, and who require to use any or all of the above-mentioned articles. The Transformer is connected to the main supply by means of the flexible cord shown on the right of Fig. 1. The instruments to be used are connected to the terminals at the bottom of the apparatus, and the current is regulated by means of the sliding contacts in the centre. There is nothing to get out of order in these Transformers, they are always ready for use, quite permanent, and entirely do away with the need for Batteries and Accumulators. Dimensions:—Fig. 1, $10\frac{1}{2} \times 9\frac{1}{2}$ inches; Fig. 2 is the same as Fig. 1, but fitted with a polished wooden case with glass door, which adds to its appearance and protects it from injury and dust.

	£	s.	d.
Fig. 1 Transformer	4	0	0
„ 2 „	5	10	0

When ordering, state Voltage of current.

DISTRIBUTION BOARDS—*continued.*

FIG. 3.—FOR ALTERNATING CURRENT.

(See illustration on opposite page.)

This Board is a development of Fig. 1—shown on page 19—but it is larger, more handsome in appearance, and suitable for all electrical apparatus. The main supply is connected to the pair of terminals shown on the top, let into the slate, and is then distributed to all the different parts of the Board. The base is made of slate with a highly polished black enamel finish, and is perfectly fireproof. Iron wall-plates are fixed to the back, by means of which the Board is screwed firmly to the wall, but kept an inch or so away from it.

The Transformer circuit has three pairs of terminals at the base of the Board—not four as shown in the illustration—marked Caution, Syringe, and Light. The upper sliding resistance coil regulates the flow of current for Caution and Syringe, and the lower coil for the Mouth Mirror. The Root-Drier can be used from any of these three pairs of terminals. By means of the Transformer coil shown on the top of the Board, the main supply is reduced with very little loss of energy. It takes less than 2 amperes from the main supply, and gives a low-pressure current of anything up to about 12 or 14 amperes. An Alternating current is reduced with very little waste compared with a Continuous current, therefore the great usefulness of the Caution, Syringe, Root-Drier, etc., may be taken full advantage of by all users of an Alternating current.

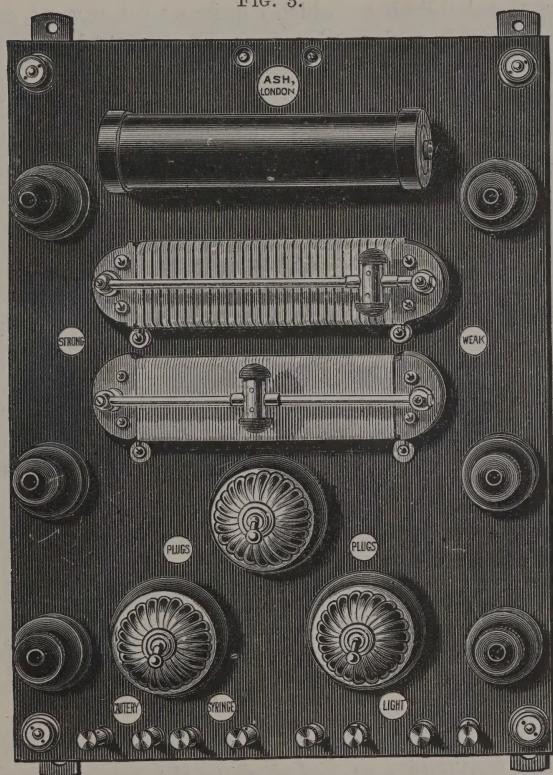
When once the Board has been properly fixed there is nothing which can get out of order with ordinary, fair usage. It is quite permanent, and the current to all the different circuits is available at any moment. For particulars of side plugs, etc., see page 18.

Dimensions : 16 inches long by 12 inches wide.

	£	s.	d.
Fig. 3 Board, 100 to 120 volts Alternating current .	7	0	0
„ „ 200 to 250 „ „ „ .	7	10	0
„ „ in White Marble, to order .	extra	0	15 0

ALTERNATING CURRENT DISTRIBUTION BOARD AND TRANSFORMER— *continued.*

FIG. 3.



A Signal Lamp is now fitted on the top of the Board, which is always alight when the Transformer switch is closed. This warns the Operator that current is being wasted if the Transformer circuit is not in use.

For Continuous Current Board see pages 22-25.

CONTINUOUS CURRENT RESISTANCE FOR CAUTERY, Mallet, HOT-AIR SYRINGE, ROOT-DRIER, MOUTH-EXAMINING LAMP, ETC.

FIG. 4.—*See opposite page.*

This neat Resistance Board is for reducing the pressure of 100 to 120-volt Continuous current (lighting or power circuits), so that any of the apparatus mentioned above, which require a weak current, can be used with safety, and without fear of a burn-out as would happen if they were connected direct to the main supply.

Nearly all the distribution or switch-boards at present in the market have to be used with Accumulators, which many Operators object to because of the liability of damage to the internal plates, caused either by over- or under-charging, and their consequent failure to act when required for use.

The great advantage of our Resistance Board is that *no* Accumulators are required; the main current supply is reduced by means of wire resistance coils, fitted at the back of the polished black enamel slate front; the waste energy of the current is given off in heat from the coils, but the whole apparatus is perfectly fireproof. Unnecessary waste of current and overheating are easily avoided by switching off the main supply, with the switch in the centre of the upper part of the Board, as soon as the Operator has finished using the apparatus with which he is working.

The wires from the main supply are connected to the plug shown in the right-hand top corner of the illustration, with the main fuse or cut-out on the left side, and the switch between them. Three pairs of terminals are fitted at the base of the Board, to which the flexible wires from the mouth lamp, cautery, etc., are fitted; above these is a double lever switch, and a resistance coil with sliding contact, by means of which the current is supplied to the terminals below, and regulated to any degree to suit all the different articles mentioned.

This Resistance Board meets a long-felt want in the dental surgery, and if used with ordinary care, according to the instructions sent with it, should last for many years without getting out of order.

Dimensions: $12\frac{1}{2} \times 11 \times 4$ inches.

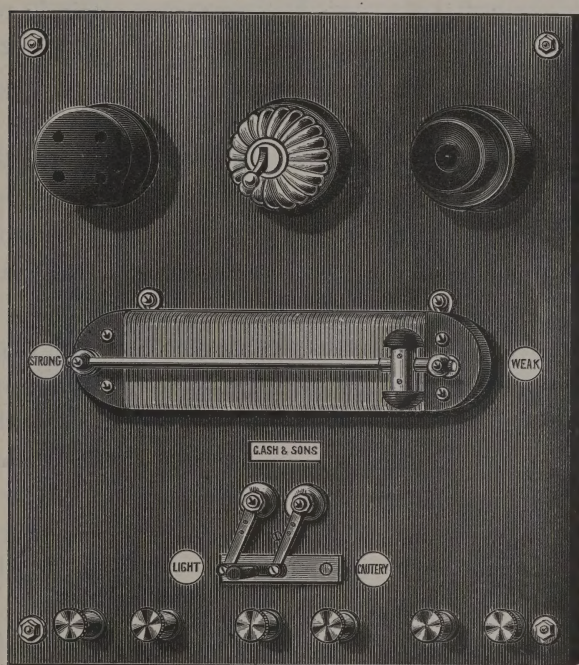
Fig. 4, for 100 to 120-volt Continuous current	£	s.	d.
	5	15	0

Not made for 200 volts and upwards.

For higher voltages Fig. 5 Board, shown on page 25, **must be used.**

CONTINUOUS CURRENT RESISTANCE—*continued.*

FIG. 4.



A Signal Lamp is now fitted above the switch. It is always alight when the current is passing through the coils behind, and serves to remind the Operator to switch off the current when it is not required, and thus to prevent waste.

CONTINUOUS CURRENT DISTRIBUTION AND RESISTANCE BOARD.

FIG. 5.—*See opposite page.*

This Board is designed for use with Direct (Continuous) current apparatus of all descriptions, and is similar to Fig. 3, on page 21, which is for Alternating current only. No Accumulators are required; resistance coils are fitted behind similar to the coils behind Fig. 4, on page 23. The current only passes through these coils when the Cautey, Syringe, Root-Drier, Mouth Lamp, etc., are required. It is divided into two separate circuits, each having its own switch (one marked Light and the other Cautey) and regulating coil with slide. A Signal Lamp is fitted on the top of the Board, and is always alight when the Cautey switch is closed. This serves to remind the Operator to switch off after use, and thus to prevent waste.

On each side of the Board is a set of three main current plugs, which are controlled by two switches marked Plugs. From these any apparatus, which will take the full voltage of the main supply, can be attached, such as Engine, Lathe, Fan, Furnace, Gold Annealer, Hot-Water Apparatus, Steriliser, etc. The wires from the main supply are attached to the pair of terminals, marked Mains, on the upper part of the Board on the right-hand side, and the current is distributed over the Board from behind to the different plugs and coils as required.

When it is once properly fitted up and connected to the main supply the Board is quite permanent, cannot readily get out of order, is always ready for immediate use, and is perfectly fireproof.

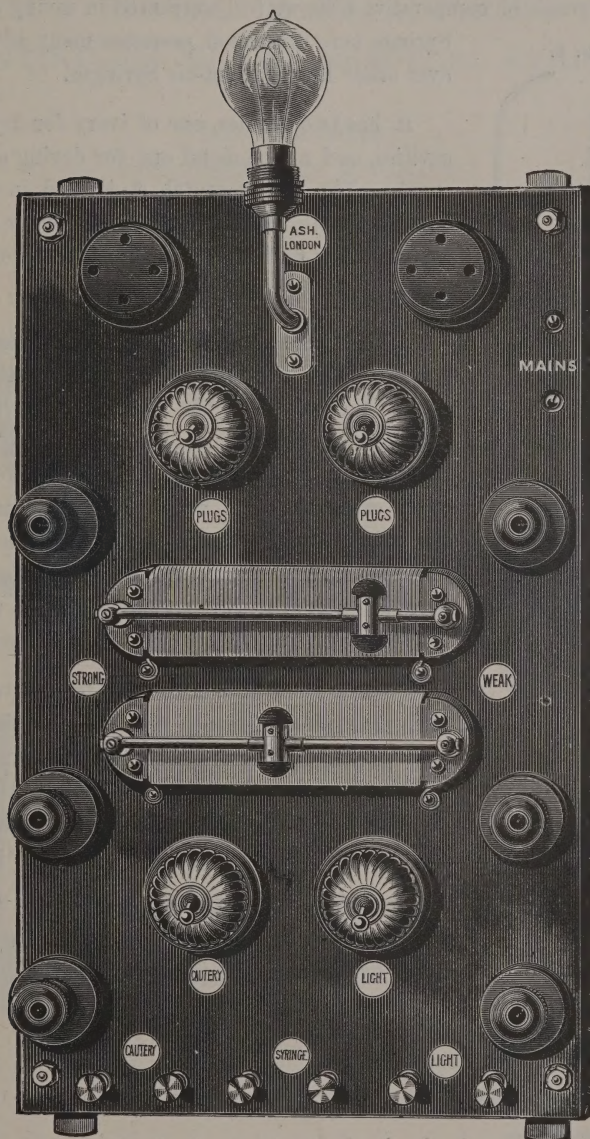
Dimensions: Length, 16 inches; width, 12 inches; depth, 6 inches.

See also page 18.

	£	s.	d.
Fig. 5, for 100 to 120-volt Direct current . . .	7	12	6
„ for 200 to 250 „ „ . . .	11	0	0
Made in White Marble, to order . . . extra	1	0	0

CONTINUOUS CURRENT DISTRIBUTION AND
RESISTANCE BOARD—*continued.*

FIG. 5.

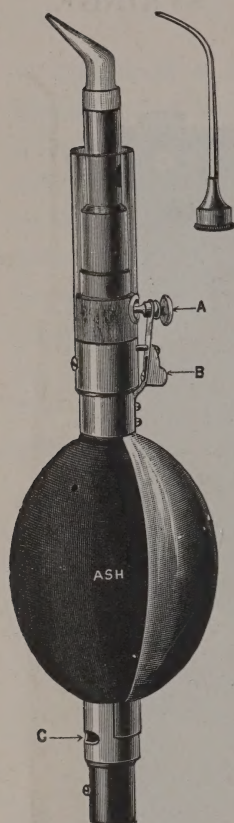


For Alternating Current Boards see pages 19-21.

ASH'S ELECTRIC HOT-AIR SYRINGE.

As the result of comparative tests we feel warranted in saying that the Syringe here illustrated possesses many advantages over other Electric Hot-air Syringes.

FIG. 3.



About half-size.

A—Switch.

B—Switch Holder.

C—Air Valve.

It has two nozzles, one of ivory for drying out cavities, and a fine metal one for drying out root-canals. The spring switch **A** is held in position by the thumb, or by pushing the ivory slide **B** forward it is fixed firmly, and contact is made for any length of time.

A glass tube is fitted over the metal case which contains the heating coil; this protects the patient's cheek from the hot case, but is easily removed if not required, or should space not permit of the extra thickness which it gives to the outer case. A small mica window is fitted into the metal case, so that the coil inside can be seen and the electric current properly adjusted. The wires are provided with special terminals which fit into the socket at the lower end of the Syringe.

To heat the coil, a current of from 4 to 6 volts and about 6 amperes is required. This can be readily obtained from accumulators, or from any lighting supply of 100 to 250 volts, provided a suitable Resistance or Transformer is used, such as our Figs. 1 to 5 Boards, shown on pages 18 to 25.

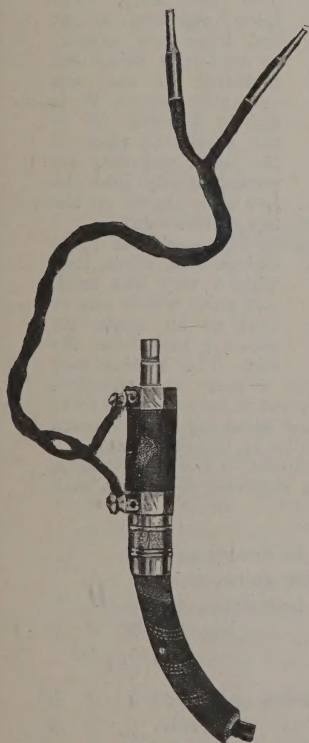
Should the platinum coil accidentally burn out, the metal sheath can be unscrewed and a new coil fitted by the Operator in a few minutes.

Syringe complete with two nozzles and 7-ft. length of flexible wire fitted with terminals (Fig. 3)	£	s.	d.
	1	18	6
Extra Platinum Coils each	0	2	6
„ Glass Tubes „	0	0	10

THE ELECTRO DENTAL MANUFACTURING COY.'S CONTINUOUS BLAST ELECTRIC SYRINGE,

FOR USE WITH
COMPRESSED AIR APPARATUS.

STYLE A.



Inside Tube **A** is a platinum coil which is heated by an electric current over which the air passes.

The Switch **B** turns on the current and air supply in one movement.

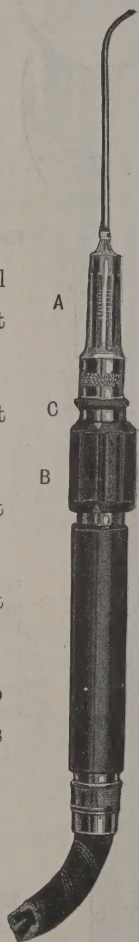
No. 1 Winding requires a current of 15 volts, 1.25 amperes.

No. 3 Winding requires a current of 6 volts, 4 amperes.

Suitable for use with the Electro Dental Manufacturing Coy.'s or Ash's Switchboards.

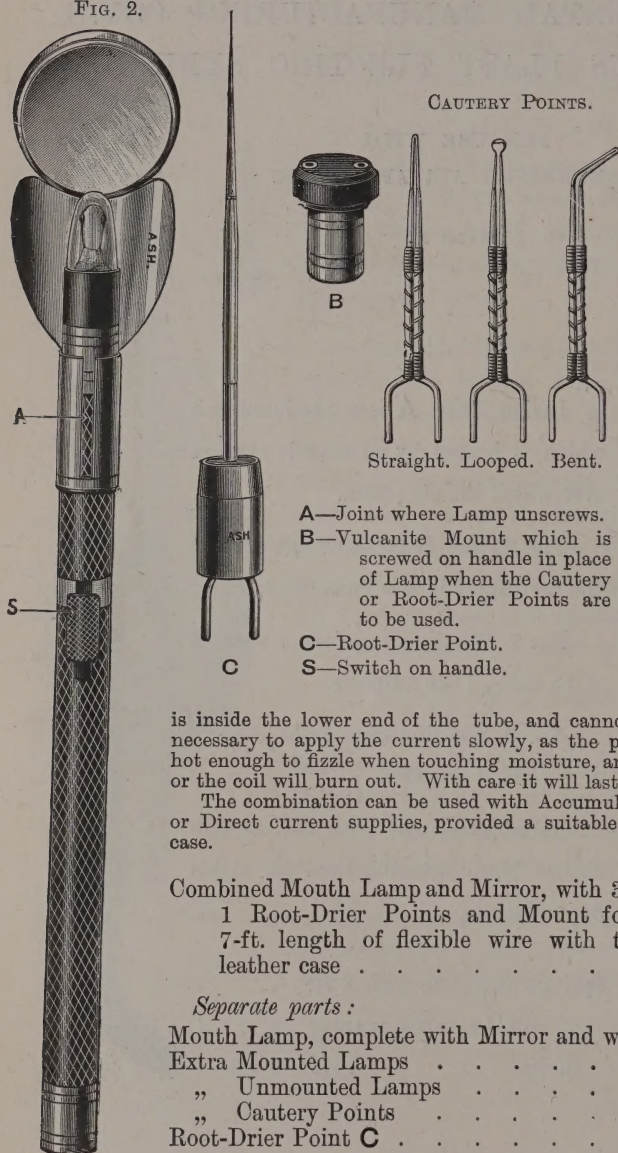
Syringe complete with 6 ft.

of silk - covered rubber	£	s.	d.
tubing	3	3	0



ASH'S COMBINED ELECTRIC MOUTH LAMP, CAUTERY, AND ROOT-DRIER.

FIG. 2.



CAUTERY POINTS.

Straight. Looped. Bent.

- A—Joint where Lamp unscrews.
 B—Vulcanite Mount which is screwed on handle in place of Lamp when the Cautery or Root-Drier Points are to be used.
 C—Root-Drier Point.
 S—Switch on handle.

The handle of this combined Mouth Lamp and Cautery is made of metal insulated with a thin vulcanite sheath, and the sliding switch **S** moves upwards and downwards. The flexible wires are fitted with a special terminal, which fits into the socket at the lower end of the handle and connects it with the source of supply. The mirror is removed by sliding it over the lamp. The lamp unscrews at **A**, and when the cautery or root-drier points are required for use the vulcanite mount **B** is tightly screwed on to the handle in place of the lamp, and they are pushed firmly into the top of the mount.

The root-drier point **C** is a thin silver tube with a very fine solid, soft point which can be bent at an angle for about 1 inch from the end. The heating loop

is inside the lower end of the tube, and cannot be seen; it is therefore necessary to apply the current slowly, as the point is only required to be hot enough to fizzle when touching moisture, and must not be overheated or the coil will burn out. With care it will last for an indefinite time.

The combination can be used with Accumulators, or from Alternating or Direct current supplies, provided a suitable regulator is used in each case.

Combined Mouth Lamp and Mirror, with 3 Cautery and
 1 Root-Drier Points and Mount for same, and
 7-ft. length of flexible wire with terminals, in

	£	s.	d.
leather case (Fig. 2)	2	5	0

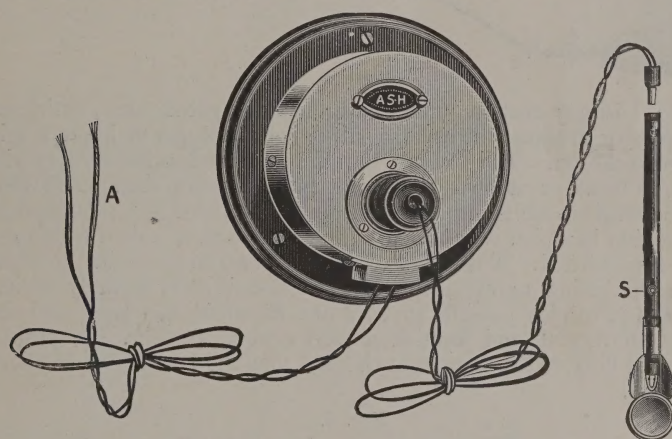
Separate parts :

Mouth Lamp, complete with Mirror and wires only	1	0	0
Extra Mounted Lamps each	0	5	6
„ Unmounted Lamps „	0	2	0
„ Cautery Points „	0	2	6
Root-Drier Point C	0	10	0

ASH'S ELECTRIC MOUTH LAMP WITH RESISTANCE.

TO WORK FROM ANY ORDINARY LIGHTING CIRCUIT.

This Lamp and Resistance together are suitable for working on any current of from 100 to 250 volts. Each Resistance is made to give the exact amount of current required to light the Lamp to its proper brilliancy, and to suit the particular voltage obtainable; it must not be used on any other voltage, or for working any other apparatus.



A—Wires to source of supply.
S—Switch on Lamp handle.

To arrange for use, all that is necessary is to lay the Resistance on a table or to screw it to the wall, to connect the flexible wire from the side of the Resistance to a convenient wall-plug or lamp-socket, and to push the plug which is connected to the Lamp wire into the Resistance. If the Switch on the Lamp handle is then pushed forward the Lamp will light.

The handle of the Lamp is covered with a non-conducting material, very neat in appearance, which effectually protects both Operator and Patient from all risks of shocks.

The Resistance has a metal cover, nickel-plated and mounted on an ebonised wooden back.

Lamp and Resistance complete with Mirror and two	£	s.	d.
yards of flexible wire for main plug	1	15	0
Extra mounted Lamps, 6 volts each	0	5	6
„ unmounted „ „ „	0	2	0
Lamp-Socket Plug, if required extra	0	1	6

ELECTRIC REFLECTOR BRACKETS.

The following illustrations of our present forms of Brackets and Reflectors are sufficiently varied in style to meet the needs of Operators in general, and add greatly to their comfort when they are obliged to work by artificial light.

FIG. 1.

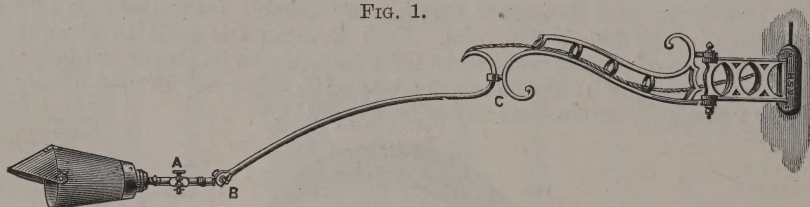


Fig. 1 is very neat in appearance, and has a great range, which enables the Operator to adjust the light to suit either the upper or lower jaw in any required position. The Bracket should be screwed to the wall or window-frame, in front, or at the side of the chair. It can then be moved into position without adjusting any screw or ratchet, and will remain steady in the position in which it is placed. The long arm is raised or lowered by being gently lifted. This allows the curved end to move in the socket **C**. When the lifting movement ceases the arm is held securely by its own weight, and cannot possibly slip. Joint **B** allows the lamp and shade a vertical movement, and joint **A** a horizontal movement. In position as illustrated it extends 5 feet from the wall, but the length can be shortened as desired.

FIG. 2.

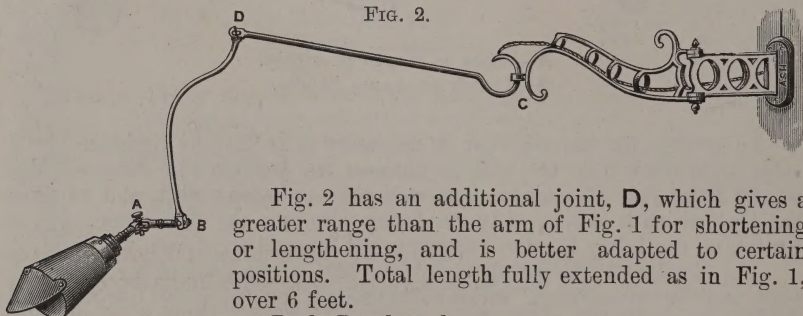


Fig. 2 has an additional joint, **D**, which gives a greater range than the arm of Fig. 1 for shortening or lengthening, and is better adapted to certain positions. Total length fully extended as in Fig. 1, over 6 feet.

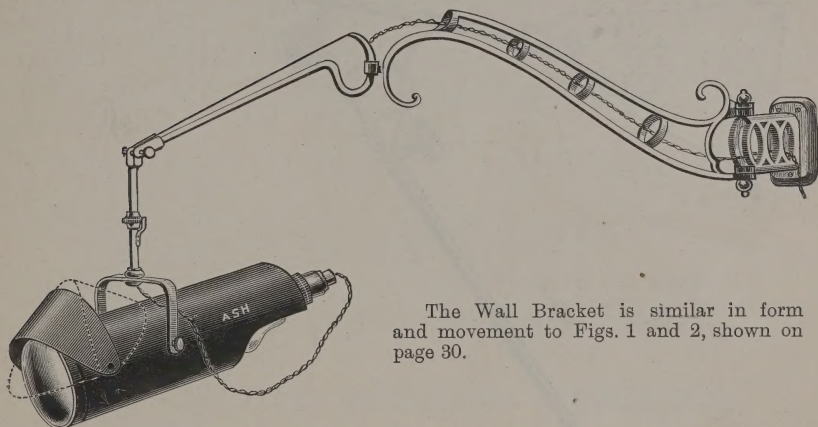
Both Brackets have a very neat copper oxidised finish, and do not require polishing; they always look neat, and can be folded up when not in use.

PRICES, with Screw or Bayonet Lamp-Sockets :

	£	s.	d.
Fig. 1. Complete with lamp as illustrated	1	8	0
„ 2. „ „ „ „	1	10	0
Extra Aluminium Shades, with mounts	0	4	0

ELECTRIC REFLECTOR BRACKETS—*continued.*

FIG. 2B.



The Wall Bracket is similar in form and movement to Figs. 1 and 2, shown on page 30.

The Bracket is fitted with a suspended tube reflector, oxidised outside and white inside. At the back of the tube a special lamp is fitted, which throws a powerful light, through a magnifying lens in front, direct into the patient's mouth, without spreading all over the face and into the eyes. Over the top of the lens an adjustable shutter is fitted, which further protects the patient from the light reflected from the inside of the tube. This shutter can be turned back on the top of the tube, or lowered down half-way over the lens, as shown by the dotted lines in the illustration.

The back of the tube directly under the lamp is cut away to allow the light to be reflected downwards on to the instrument table. By this arrangement the Operator has a good light in the only two places required during an operation, *i.e.*, in the patient's mouth and on the instrument table. All other lights in the room may be switched off, greatly to the relief of the Operator, who may have to work some hours every day by artificial light during the winter months. To work without a ray of light direct on one's eyes is a very great relief.

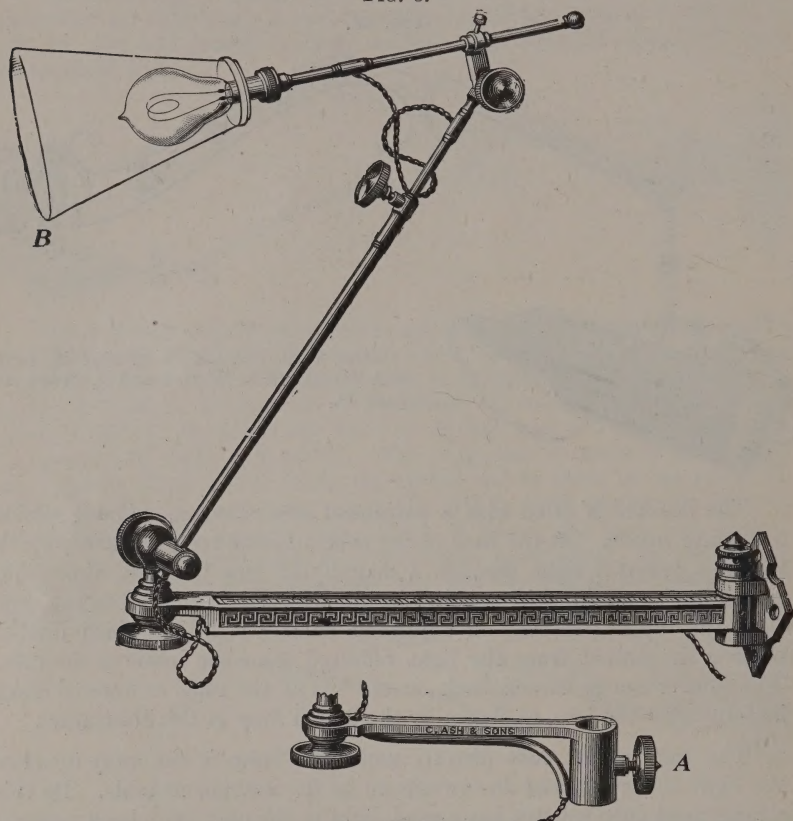
	£	s.	d.
Fig. 2B Bracket and Reflector, complete with Lamp	2	17	6
„ 2B Reflector, with Lamp only, for Brackets in use	1	17	6
Extra Lamps, special form	0	5	6

Supplied for any Voltage with Screw or B.C. Socket Lamps.

UNIVERSAL ELECTRIC REFLECTOR BRACKET.

(MR. LÉSLIE FRASER'S.)

FIG. 3.

*DESCRIPTION :*

The complete illustration shows the Bracket fitted with horizontal arm for screwing on to the wall in front or at the side of the chair. It is nickel-plated throughout, and the centre arm is telescopic, the conducting wires being passed through the tubes and connected to the back of the lamp socket. The light can be thrown down on to the lower teeth when fixed as in the illustration, or upwards on to the upper teeth by adjusting the two upper arms below the horizontal arm ; in fact, it can be suited to any workable position in which the patient's head is placed.

When once the set screws are adjusted they do not require altering each time the position is changed. When not required for use the Bracket can be folded up and pushed flat against the wall out of the way.

ELECTRIC REFLECTOR BRACKET—*continued.*

The horizontal arm reaches $19\frac{1}{2}$ inches from the wall, and the Bracket can be extended 5 feet from the wall to the end of the aluminium shade, *B*.

The lower illustration, *A*, is for securing the Bracket to the upright rod of any chair attachment, or to any stand that may be in use by the chair side. The stock size fits the upright of our chair attachments, but can be made **to order** to fit any other upright if a plaster cast of the rod is sent.

The style of shade now fitted over the lamp is the same as on Fig. 1, p. 30. The lamps and sockets are standard patterns; 16-c.p. lamps usually supplied.

Bracket with Wall Attachment, as illustrated, complete	£	s.	d.
with Lamp	4	3	0

Bracket with horizontal arm <i>A</i> for fitting on upright rod of any Chair Attachment, complete with Lamp	3	3	0
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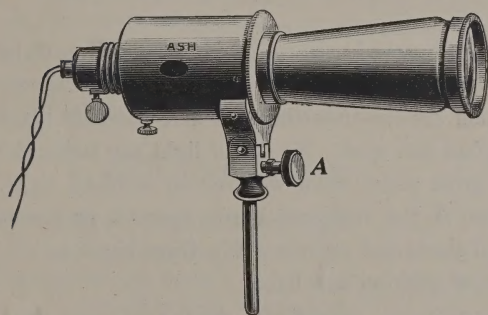
Supplied for any Voltage with Screw or B.C. Socket Lamps.

Supplied Oxidised instead of Nickel-plated to Order.

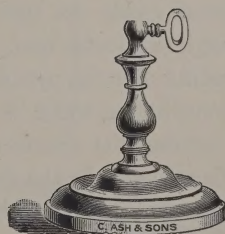
THE ELECTRIC TELSCHOW REFLECTOR

Shown below is supplied with rod to fit the tube in the centre of Bracket tables, or the Stand here illustrated.

With this new form of Reflector the lamp is entirely enclosed at the back of the lens tube, and the tube can be tilted upwards or downwards by means of the screw *A*.



ELECTRIC TELSCHOW REFLECTOR.

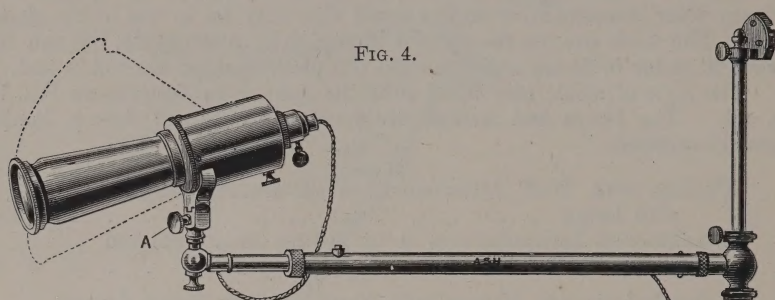


STAND.

Reflector only, as illustrated, including Lamp. each	£	s.	d.
„ with Stand	2	2	0
Stand separately	0	5	0
Extra Lamps, special shape	0	2	9

Supplied with B.C. or Screw Lamps.

TELSCHOW'S REFLECTOR AND TELESCOPIC BRACKET.



This Bracket consists of a horizontal telescopic arm attached to a vertical rod about 18 inches long, and can be fixed to the wall either in front or at the side of the chair.

By means of the telescopic arm the Reflector can be brought forward any distance between 35 inches and 53 inches from the wall, and raised or lowered on the vertical rod to suit any position in which the Operator requires the light.

The Reflector is our new improved pattern Telschow's; the lamp is enclosed inside the tube at the back, the light being thrown directly through the double lens, which concentrates the rays and prevents them spreading over the patient's face and eyes. No ray of light can strike the Operator's eyes, which is a great relief when working by artificial light. By turning the thumb-screw **A** the Reflector moves upwards or downwards as shown by the dotted lines, and swivels easily from right to left, and remains steady in whatever position it is fixed.

The Bracket is neatly finished, copper oxidised, which does not require any polishing to keep clean, and always looks neat. Nickel-plated to order.

	£	s.	d.
Bracket, with Improved Telschow's Reflector . . .	3	5	0

Supplied for any Voltage with Screw or B.C. Socket Lamps.

ADAPTABLE PENDANT.

(PATENTED.)

This Pendant is very useful in the dental surgery, both for general lighting and for throwing light into the patient's mouth; especially for anæsthetic operations, where a well-diffused light is required.

The chief advantage possessed by this over similar pendants in the market is that it has only one balance weight, which gives it a much better appearance, and permits of the shade being quickly adjusted to the height and angle required, without adjusting any screws; a touch with the hand is enough to alter the position, and to tilt the shade to any angle.

The fittings are polished brass or oxidised silver finish, with black vulcanite pulleys, silk-covered cords, with green and white opal shade.

Each Pendant is supplied complete with wooden ceiling block, and is fitted with cords ready for fixing, as illustrated. Length when down, 6 feet; longer wires fitted to order for high ceilings, and charged extra.

PRICE, without Lamp:

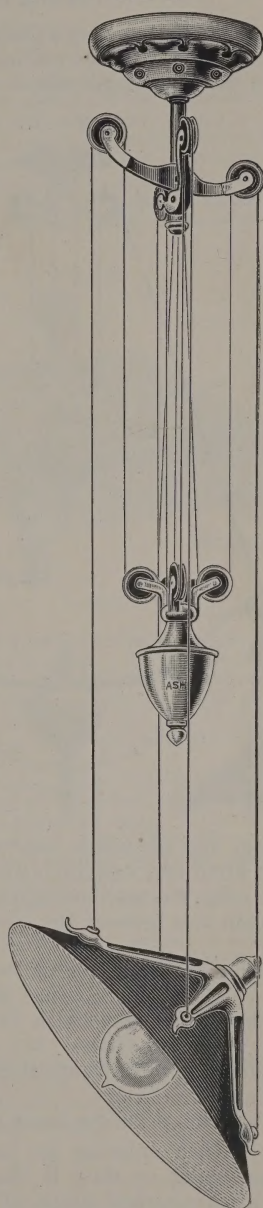
		£	s.	d.
Complete, in Polished Brass	each	1	7	6
„ Oxidised Silver	„	1	14	0
Lamps, 16-c.p. Carbon	„	0	1	6
„ 16- or 25-c.p. Tantalum,				
for 100 to 120 volts	each	0	2	6

Can be supplied with Screw Lamp-Sockets, if desired, extra 2s. 6d.

Two 16-c.p. Tantalum Lamps, with double lamp-socket, for voltages from 200 to 240, extra 7s. 6d.

F

FIG. 6.



D 2

ADAPTABLE PENDANTS.

Fig. 7 is a very suitable Pendant for those Operators who like lamps suspended from the ceiling over the operating chair. With two lamps, one on the right-hand side of the patient and the other on the left-hand side, the light is equally distributed, and coming as it does to the patient's mouth from two different directions, there is less shadow than is usually present when one lamp only is used.

By using two tantalum or other metallic-filament lamps *in series*, less current is used than is consumed by one ordinary carbon-filament lamp.

The height of the lamp can be varied in a moment by means of the counter-weight and pulleys.

The Pendants are supplied in lacquered brass finish, imitation gilt or bronze, or in oxidised silver.

The shades most suitable for dental work are green and white opal glass, the same shape as the one shown on Pendant Fig. 6, page 35, or a similar shape in clear glass covered with coloured silk.

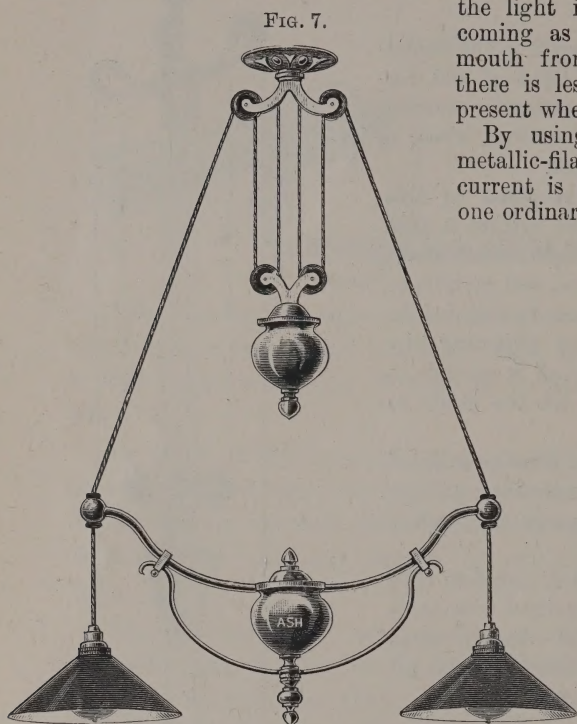
The standard length of the cords allows of a 6-feet drop from the ceiling,

and the width between the lamp-sockets is 20 inches. Each Pendant is wired and supplied with ceiling block.

Fig. 8—not illustrated—is a cheap form very similar to Fig. 7, but with plain arm between the lamp holders and without the fancy centre.

	Fig. 7.			Fig. 8.		
	£	s.	d.	£	s.	d.
Pendant complete with two lamp-sockets and Green Opal shades, minus lamps	2	0	0	1	10	0
Pendant complete with two lamp-sockets and Silk-covered shades	2	5	0	1	15	0
Either form in Oxidised Silver finish extra	0	6	6	0	5	6
Tantalum Lamps	0	2	6	0	2	6
Pendants fitted for screw lamps	0	2	0	0	2	0

When ordering for use with a current of from 200 to 250 volts, be particular to state if the lamp-sockets are to be wired in parallel for ordinary carbon lamps, or *in series* for metallic-filament lamps.

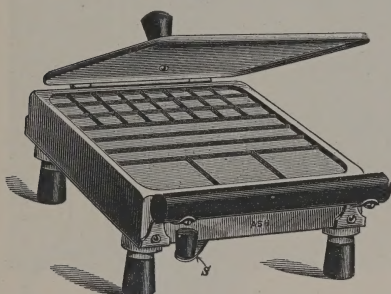


MITCHELL'S ELECTRIC ANNEALER.

FOR GOLD FOILS, PELLETS, CYLINDERS, ETC.

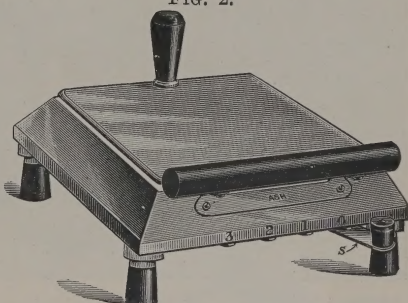
Mitchell's Annealer, in its improved styles, is the best and cheapest in the market. The design is exceedingly neat, and forms an elegant addition to the apparatus in the dental surgery. It is not a toy, but a most necessary and useful article to all who fill teeth with gold; the heat is pure, and if it is applied according to our instructions, the gold will be thoroughly annealed without being either overheated or perished. The amount of current used is so very small that it is not worth taking into account. Each Annealer can be worked direct from any wall-plug or lamp-socket adapter. Fig. 1 gives full heat only; Fig. 2 can be regulated to three different degrees of temperature.

FIG. 1.



OPEN.

FIG. 2.



CLOSED.

Fig. 1 with Switch only.—The terminals are fitted underneath, so that there is very little chance of touching them and receiving a shock. To these, ordinary flexible wires should be fitted, and connected direct to any wall-plug or lamp-socket adapter. The current is easily and quickly switched on or off by means of the switch in front. An ebonite rod is fitted on the front which acts as a finger-rest when switching the current on or off, and when picking up the gold from the surface. The handle on the top acts as a stop for the lid when opened.

To prevent overheating and burning-out of the heating coil, the current should only be switched on for two or three minutes after the gold has been spread over the surface. A touch on the switch quickly cuts off the current supply; in the two or three minutes mentioned sufficient heat will have been generated to thoroughly anneal the gold. If the gold first annealed is insufficient to finish the filling, a second lot can be quickly annealed by repeating the above instructions.

The heater is fitted with four ebonite legs, which permit of its being safely used on a bracket table or cabinet.

Fig. 2, with Heat Regulator.—Fig. 2 is similar to Fig. 1, but has in addition a suitable resistance which enables the Operator to vary the heat. On the front of the Annealer above the switch handle are four figures—0, 1, 2, 3. When the switch is at No. 0, the current is cut right off; moving it to No. 1 allows of sufficient current to warm up the surface of the Annealer, but not for annealing gold; No. 2 gives a medium heat, which is sufficient for some kinds of gold; and No. 3 gives full heat, all resistance being cut out. The switch handle should not be allowed to remain at No. 3 for more than two or three minutes; it should then be moved back to No. 1. This keeps the Annealer hot, and if a further supply of gold is required to be annealed, the heat can again be quickly raised by moving the switch on to No. 2 or No. 3.

					£	s.	d.
Fig. 1.—As illustrated, for any Voltage	.	.	.	.	2	7	6
" 2.—	"	"	"	"	3	3	0

ELECTRIC STERILISERS, HOT-WATER JUGS, ETC.

The Jugs, Sterilisers, etc., shown on this and next two pages are of the best make of electrically heated hot-water apparatus. They are very neat

FIG. 1.

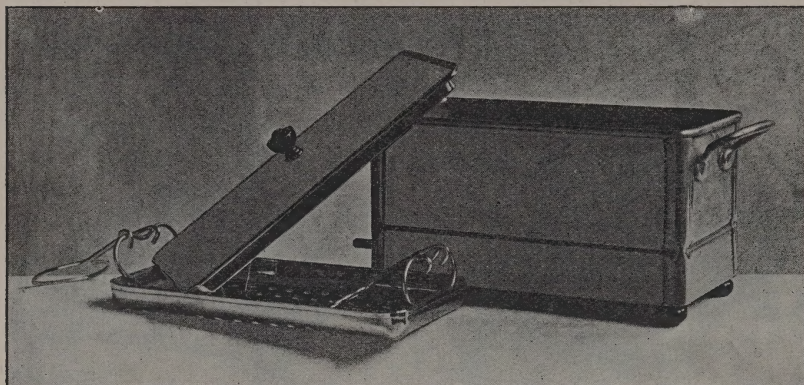
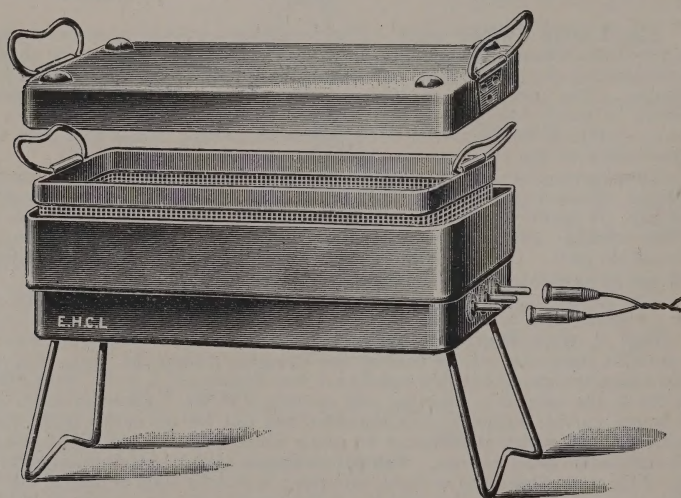


FIG. 1A.



in appearance, and retain the heat for a considerable time after the current has been switched off. The heat may be regulated in all of them excepting Figs. 5 and 8, which are arranged only to heat up to boiling point. Lower

ELECTRIC STERILISERS, HOT-WATER JUGS, ETC.

—continued.

temperatures, as well as full boiling point, are obtainable in the other sterilisers and jugs. The risk of a breakdown is exceedingly small, provided that there is always water in the containers when the current is on.

Fig. 1.—Steriliser. This has recently been improved in shape and design. Size, $8 \times 4 \times 3$ inches, fitted with short porcelain studs to stand on.

Fig. 1A.—Steriliser. Very similar to Fig. 1 in shape and size ($9 \times 5 \times 2\frac{3}{4}$ inches), and fitted with strong wire legs, which fold flat underneath when not required. Both Figs. 1 and 1A are provided with a perforated

FIG. 4.

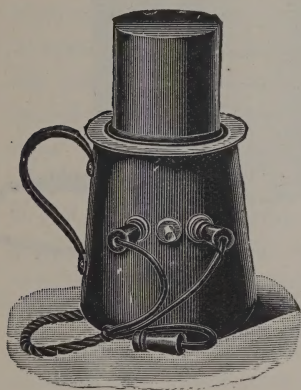
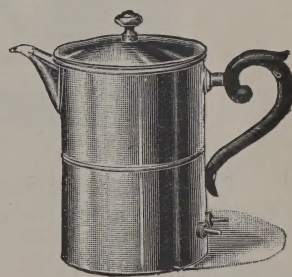


FIG. 5.



tray, on which the instruments are placed and lowered into the liquid by means of hooks.

Fig. 4.—Steriliser. The lower part of this is the water container, which is lined with white enamel; the top part, or instrument container, is perforated in the lower portion and fitted with a removable lid. The instruments stand upright with the points in the liquid, the handles being sterilised by the steam.

Fig. 5.—Hot-Water Jug, $2\frac{1}{2}$ pints capacity.

„ 6.— „ „ 2 „ „

„ 7.— „ „ $3\frac{1}{2}$ „ „

Fig. 8.—Hot-Water Tank, 6 pints capacity, with flat back and rounded front, $10 \times 8 \times 5$ inches. Suitable for hanging on a wall or for standing on a table or shelf.

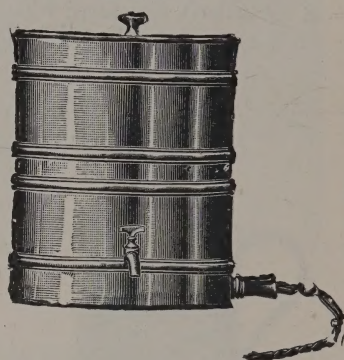
ELECTRIC STERILISERS, HOT-WATER JUGS, ETC.*—continued.*

Fig. 8A.—Same size, etc., as Fig. 8, but fitted with three-heat self-indicating plug, giving low, medium, or boiling temperatures. A glass water-gauge tube is fitted outside; this shows the depth of water inside the tank at a glance. This is most suitable for the dental surgery. After boiling, the plug is turned to the low heat, and the water is kept hot all day.

FIGS. 6 and 7.



FIG. 8.



Each of the above Sterilisers, Jugs, and Tanks is fitted with 2 yards of flexible wire, and all the metal parts are heavily nickel-plated.

										£	s.	d.
Fig. 1.	Steriliser	.	.	.	.	.	.	.	.	2	10	0
„	1A. „	.	.	.	.	.	.	.	.	2	15	0
„	4. „	.	.	.	.	.	.	.	.	1	15	0
„	5. Hot-Water Jug.	.	.	.	.	.	.	.	.	1	10	0
„	6. „	„	.	.	.	.	.	.	.	1	13	0
„	7. „	„	.	.	.	.	.	.	.	1	16	0
„	8. „ Tank	.	.	.	.	.	.	.	.	2	17	6
„	8A. „	„	.	.	.	.	.	.	.	3	10	0

State voltage of current supply when ordering.

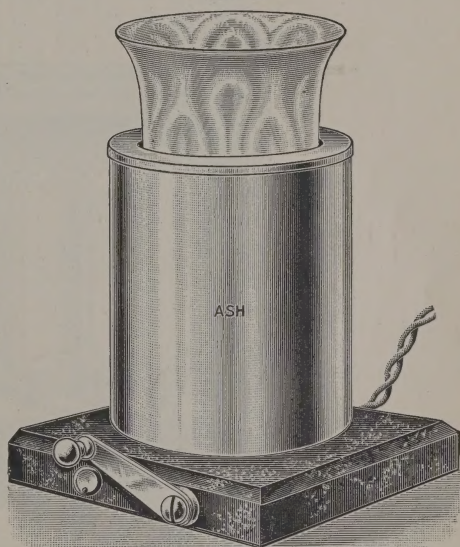
A small perforated nickel basket is supplied for use with the above Sterilisers, to hold burs, drills, clamps, etc.; price 5s.

ELECTRIC TUMBLER HEATER AND INSTRUMENT STERILISER.

This little Heater is most useful for standing on the bracket table or cabinet. It consists of a metal cup mounted on a black slate base. A glass tumbler for holding water is fitted in the cup; the water is heated and remains hot for any length of time with a very small consumption of current. Water of the right temperature can thus always be kept ready for syringing out cavities, etc.

There is a small switch on the base of the Heater which when closed allows the current to heat up the water to boiling point, but when it is opened it only allows the water to reach from 100 to 110 degrees Fahrenheit. This is just about the temperature required for syringing out cavities, etc., and for warming steel instruments during cold weather. The water will remain at this temperature as long as the switch remains open, and it is quickly raised to a higher temperature at any time by simply closing the switch.

FIG. 9.



Other similar heaters do not boil water, but only raise it to a temperature of about 180° Fahrenheit. This, however, is designed to boil water, so as to make it useful for ordinary purposes and for sterilising small instruments, etc. A separate tumbler should be employed for sterilising.

	£	s.	d.
Fig. 9 Heater with glass Tumbler and 2 yds. wire . . .	1	10	0
Extra glass Tumblers . . . each, 9d.; per ½ doz.	0	4	0

ELECTRIC LAMP RADIATORS.

Radiators, or Convectors, are most suitable for heating dental operating and waiting rooms. The great advantages which they possess over other forms of heating stoves are adaptability and cleanliness. They are not usually fixed in a permanent position, hence they can be easily moved to any part of a room where the heat is specially required. No flue is necessary, as they do not give off noxious gases or consume the oxygen of the air in the room.

Radiators can be supplied with from two to six lamps, each lamp consuming 250 watts.

FIG. 1.

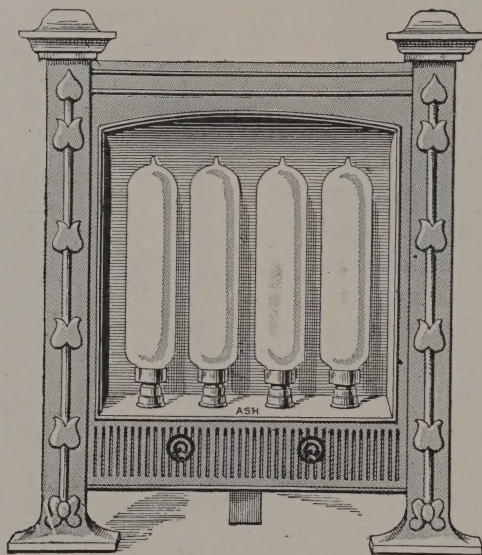


Fig. 1 shows one of the Radiators fitted with four lamps and two switches. By means of the two switches two or four lamps can be used as desired. This Radiator is only one of many patterns. Numerous forms and designs can be supplied. A full list, with prices, may be had on application.

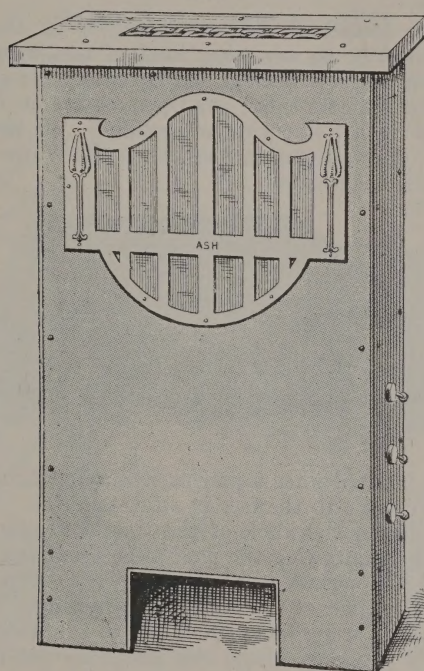
		£	s.	d.
Radiator with Two Lamps	from	1	10	0
„ „ Three „	„	2	0	0
„ „ Four „	„	3	3	0

ELECTRIC CONVECTORS.

This form of Electrical heating apparatus is often more suitable than the lamp Radiators which are described and shown on the opposite page. The system of heating consists of strips (or elements) connected in parallel, instead of the long lamps used in the Radiators.

The air of the room in which a Convector is placed circulates through the apparatus, and thus uniformly raises the temperature of the whole room.

FIG. 2.



This illustration shows one of the cheaper forms; many other designs are made in hand-beaten Brass, Copper, etc. Full list sent on application.

A sheet of fancy-coloured glass is usually fitted behind the grille in front, with an ordinary glow-lamp at the back. The lamp serves more for giving the apparatus a warm appearance than for heating purposes. Three switches are fitted to each Convector, so that full, two-thirds, or one-third heat can be obtained.

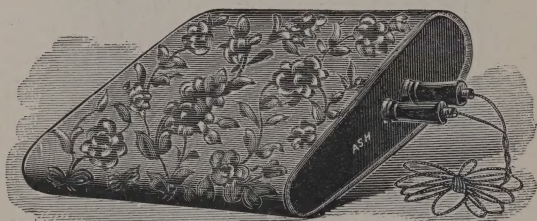
Fig. 2 Convector, as illustrated, in Iron with neat black finish, fitted with Copper grille £ s. d.
3 17 6

ELECTRIC FOOT-WARMER.

As a general rule the dental operating chair is placed directly in front of a window, in order to obtain the best light possible. This means that the footboard is close under the window and subjected to a down draught, which in cold weather makes the feet and legs of patients cold and uncomfortable. Rugs and hot-water foot-warmers keep the feet and legs warm, but the water soon cools, hence it is somewhat troublesome to maintain the heat long enough in a water foot-warmer for it to be satisfactory in use.

The electrically heated Foot-Warmer, shown in the illustration, is undoubtedly far superior to any other kind of foot-warmer, since it entirely meets the need of both patient and Operator. It gives a **constant** low temperature for patients' feet; the Operator has no trouble to keep it warm; it does not require emptying and refilling; all that is necessary to be done is to push the wall-plug in place when the Warmer is wanted, and to withdraw it when not wanted.

**Always
ready.**



**No
attention
required.**

If the plug is inserted when a patient enters the chair the Warmer will be nice and comfortable to the feet in a few minutes. The current may either be left on during the whole of the time the patient is in the chair, or switched off by withdrawing the plug after about ten minutes; if it is switched off, sufficient warmth will be generated to keep the patient's feet comfortable for the time of an average operation. With the current continuously on the Warmer takes about 100 to 120 watts per hour, which in cost is, roughly speaking, about one halfpenny per hour at fivepence per unit. If the Warmer is used intermittently, as suggested, one penny per day will cover the cost; but should the current be used from a power meter the cost will be considerably less than one penny per day.

The Foot-Warmer is made of metal, japanned black at each end, and covered all round with either Maroon or Green carpet. It is fireproof and perfectly safe in use; even if through forgetfulness the current is left on no harm can result, as the maximum temperature is much too low to permit of a "burn-out."

Each Warmer is guaranteed for twelve months.

Supplied for 100 to 120 volts or for 200 to 250 volts.

	£	s.	d.
PRICE, complete with two yards of wire. . .	1	15	0

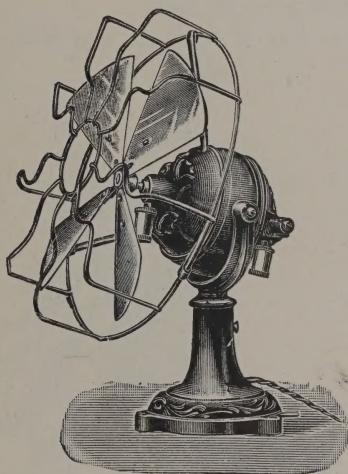
ELECTRIC FANS.

An Electric Fan is a necessity in nearly all dental practices for at least some weeks during the hottest months of the summer; hence it is advisable for all Dentists who have an electric lighting installation to have a Fan in readiness. Sultry days often arrive very suddenly, and there is at such times a great demand for Fans. It is then that disappointment is felt by those who are without a Fan if they find they cannot be supplied immediately.

Now is the time to order.

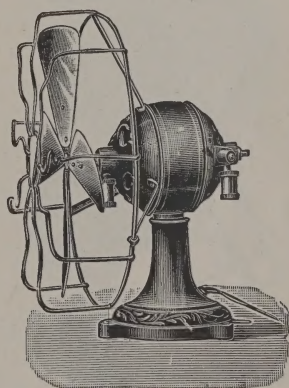
In use, a Fan takes a very small amount of current, does not cost more than a few pence per week, and can be worked from any ordinary

FIG. 1.



With Swivel and Trunnion Movements.

FIG. 2.



With Fixed Motor and Blades.

lamp-socket or wall-plug. Of the Fans shown on this and the next page, Figs. 1, 2, and 3 are portable, very readily carried from room to room, and can therefore be used in the dining or drawing room after the hours of practice.

Fig. 1 is the most popular form. It consists of motor and blades, with swivel and trunnion movements, and a suitable stand. The swivel and trunnion movements admit of the blades being turned to the right or left, and upwards or downwards. When turned upwards the air in the room is kept in free circulation and from becoming oppressive, without being driven direct on to the Operator or patient.

Fig. 2 is a cheaper form. The motor and blades are fixed in one position and blow the air in a horizontal direction.

ELECTRIC FANS—*continued.*

Each Fan has a switch fitted to the base for turning the current on or off, and for regulating the speed.

Fig. 1, with Swivel and Trunnion Movements :				Continuous.			Alternating.		
				£	s.	d.	£	s.	d.
Fan with 9-inch Blades, for 100 to 120 volts	.			2	2	0	2	5	6
" " " 200 to 250 "	.			2	6	6	2	10	0
" 12-inch " 100 to 120 "	.			2	10	0	2	14	0
" " " 200 to 250 "	.			2	14	0	3	0	0

Fig. 2, with Fixed Blades :

Fan with 9-inch Blades, for 100 to 120 volts	.			1	16	0	1	17	6
" " " 200 to 250 "	.			2	0	0	2	2	0
" 12-inch " 100 to 120 "	.			2	6	6	2	10	0
" " " 200 to 250 "	.			2	11	6	2	15	0

The 12-inch Alternating fan motors are similar in shape to Fig. 4, shown below. *The above prices fluctuate.*

Figs. 3 and 4 represent a Combination Fan for Desk, etc., and Wall.

FIG. 3.

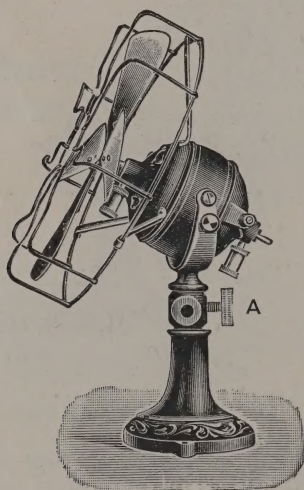
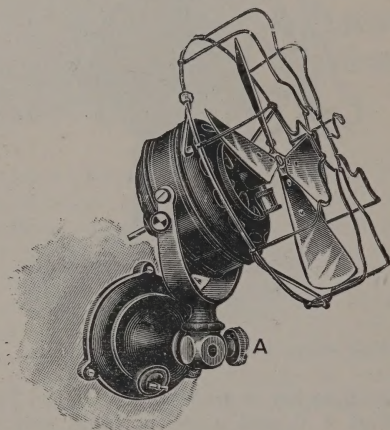


FIG. 4.



Combination Desk and Wall Fan.

The base shown in Fig. 3 is suitable for standing on any convenient desk, table, or shelf.

To convert Fig. 3 into a wall Fan, as shown in Fig. 4, release screw **A**, remove the motor, fit the adapter in its place, turn the base on its side, mount the motor, tighten screw **A**, and screw the base to the wall.

Fig. 3 shows the shape of the motor for the 9-inch and 12-inch Fans for Continuous current, also of the 9-inch size for Alternating current; and Fig. 4 shows the shape of the 12-inch size for Alternating current.

ELECTRIC FANS—*continued.**Fig. 5, Self-Rotating Ceiling Fan.*

This form is very suitable for warm climates. It must be firmly fitted to the ceiling; the combined Switch and Regulator (Fig. 6) may be fixed in any convenient position on the wall within easy reach. When the blades are in motion the motor slowly travels round the rod, and the air is thus driven into every part of the room and most effectively circulated. The blades can be set horizontally or downwards at any angle, as shown in the illustration. The rod of the Fan is 20 inches long, but it can be had of any other length to order.

FIG. 5.

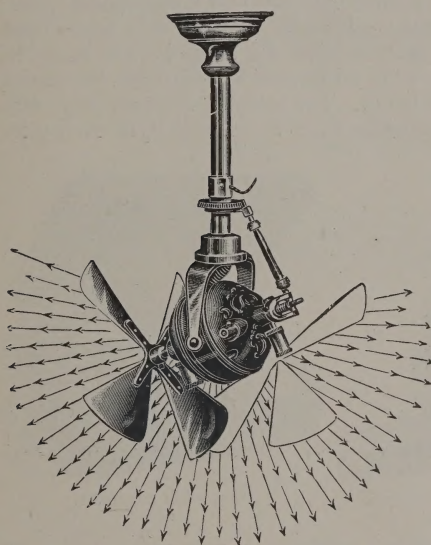
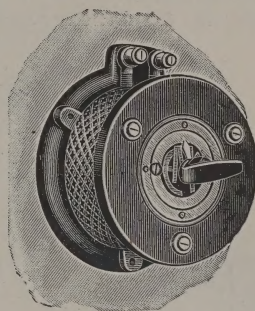


FIG. 6.



Ceiling Fan, Switch, and Regulator.

Figs. 3 and 4, Combination Fan with Adapter:	Continuous.			Alternating.		
	£	s.	d.	£	s.	d.
Fan with 9-inch Blades, for 100 to 120 volts	2	6	0	2	10	0
" " " 200 to 250 "	2	10	6	2	14	0
" 12-inch " 100 to 120 "	2	14	0	2	18	0
" " " 200 to 250 "	2	18	0	3	4	0

Fig. 5, Ceiling Fan:

Fan with 12-inch Blades and Wall Regulator, for 100 to 120 volts	5	0	0	6	0	0
Fan with 12-inch Blades and Wall Regulator, for 200 to 250 volts	5	10	0	6	15	0

Large Fans with 16-inch blades, Exhaust Fans, Long-Blade Ceiling Fans, and Small Fans to be run by Batteries or Accumulators, supplied to order. Particulars and prices on application.

The prices quoted for the Alternating current Fans are for 40, 50, and 60 cycles. Fans for other periodicities are charged about 10 per cent. extra.

ELECTRIC HEAD LAMP.

WITH DRY-CELL BATTERY,

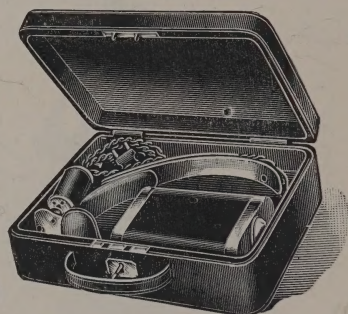
OR

FOR USE WITH MAIN CURRENT SWITCHBOARDS.

The parts here illustrated can safely be described as the lightest, neatest, and most efficient electric head lamp ever placed on the market. The reflector, which is fitted with a telescopic lens and a ball-socket joint, is detachable from the folding metal head band. The flexible cords from the reflector plug lead into the battery case, the lamp in which, in its turn, can be used independently as a miniature search-light for throat examinations, etc., or as a pocket lamp. The metallic filament bulb with which the set is fitted, and which gives such a brilliant light even after



Contents of Box set up.



Box with contents.

the voltage of the battery has dropped, consumes a very small amount of current, and will give from four to five hours of light on a battery.

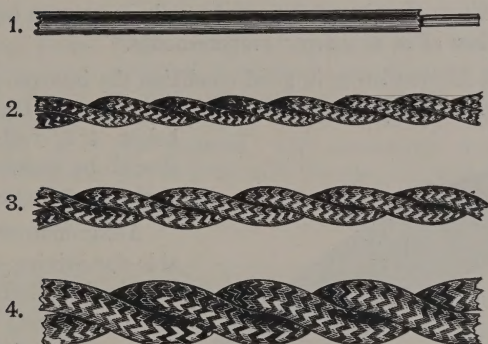
When in use the battery can be dropped in the Operator's side pocket to leave both hands free.

Operators outside the United Kingdom should have two batteries and use them alternately week by week. This allows each to recuperate, and gives it a longer life than it would otherwise have.

Size of case, 9 × 7 × 3 inches ; weight complete, 2 lbs. 10 ozs.

Head Lamp complete, in neat leather case with lock and key, as illustrated	£	s.	d.	
	2	5	0	
Head Lamp only, without case and battery, mounted as illustrated, with 9 ft. of flexible wire to connect to the terminals of switchboards at present in use		1	10	0
Extra Batteries	each	0	1	3
„ Lamps	„	0	2	6

INSULATED WIRE FOR ELECTRICAL APPARATUS.



We supply flexible wires of various sizes, suitable for all dental electrical apparatus.

Dentists frequently make a mistake by using too thin a wire for conveying the current required by the apparatus in use, particularly for furnaces, which often take from four to ten or twelve amperes, hence thin flexible wire such as is employed for ordinary lamps is useless for them.

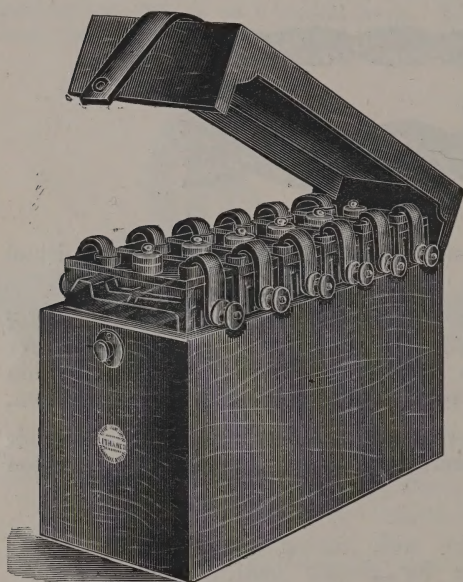
The twin flexible wires shown above are well insulated and suitable for such work. We stock them covered with a dark maroon cotton material in three sizes.

No. 1.	Single Copper Wire with rubber and cotton covering, suitable for electric bells, gilding apparatus, etc.	s. d.
	per yard	0 1½
No. 2.	Thin Twin Flexible Wire, 35-40 size, suitable for lamps, small motors, fans, and small furnaces	per yard 0 3
No. 3.	Medium Twin Flexible Wire, suitable for larger motors, medium-size furnaces, hot-water apparatus, etc.	per yard 0 6
No. 4.	Thick Twin Flexible Wire, suitable for heavy current furnaces, switchboards, cañtery, accumulators, etc.	per yard 0 9

ACCUMULATORS.

Accumulators (or storage batteries) are supplied in many different sizes from a few inches and upwards, but each cell, no matter of what size, gives an electro-motive force (E.M.F.) of from 2 to 2.2 volts when fully charged. Upon the size of the cell depends its storage capacity, which is generally spoken of as so many "ampere-hours."

To maintain Accumulators in good condition the internal plates should be kept covered with liquid, the E.M.F. should never be allowed to drop below 1.8 volts, and they should be recharged as soon as the pressure begins to drop.



SMALL PORTABLE ACCUMULATOR.

Accumulators are very suitable for driving small motors for Engine, Lathe, and Fan; also for working small Mouth Lamps, Caутery, Root-Drier, Hot-Air Syringe, etc., especially where no ordinary lighting current is available, and where a local dynamo can be used for recharging them.

We can supply quickly, *to order*, Accumulators of almost any ampere-hour capacity; the portable form shown in the illustration is very convenient and suitable for Dentists. The cells are usually put up in from 14 to 60 ampere-hour sizes in a neat polished wooden case, with

strong leather strap for carrying—two or more cells in one case, according to the voltage required.

The cells are made of transparent celluloid, which is very strong, and the inner plates and liquid can readily be seen through it. They may be charged from a continuous (or direct) current supply by using high candle-power lamps as a resistance.

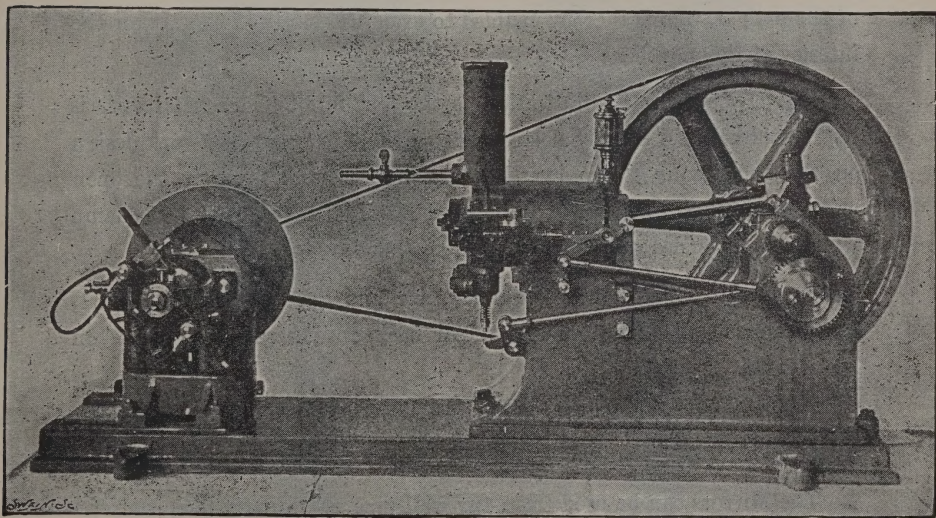
PRICES, according to number of cells and capacity required, from 35s. for two small cells and upwards.

ELECTRICAL POWER OUTFITS,

CONSISTING OF

SMALL DYNAMOS DRIVEN BY GAS OR OIL ENGINES, SUITABLE FOR DENTISTS WHOSE PREMISES ARE NOT WITHIN THE AREA OF ANY ELECTRICAL SUPPLY COMPANY.

Those Dentists who have no immediate prospect of being supplied with electrical power from outside sources, and who would like to take advantage of modern electrical appliances, can do so by installing one of these simple Outfits on their premises, either in the basement or in a convenient outhouse. The working of the Outfits is very simple; they can be started in a few minutes, and afterwards require very little attention. Where coal-gas is obtainable the gas engine is the cheapest and most convenient for driving the dynamo; but where it is not available the oil engine, although a little more expensive, is equally suitable.



NO. 0 SIZE OUTFIT.

The illustration shows a small Gas Engine and Dynamo mounted on a cast-iron base. This is one of many forms and sizes which are now obtainable.

Small Outfits for working apparatus in the Operating Room can be obtained at prices ranging from £35 and upwards.

Large Outfits suitable for supplying current for the Operating Room and for the general lighting of the house can also be had.

We shall be pleased to furnish estimates for any Outfit, on condition that full particulars are given of the work required to be done by the dynamo.

ELECTRIC HAND MIRRORS.

(PATENTED.)

These Mirrors are novel in form, very attractive in appearance, and useful to hand to patients for the examination of work done in the mouth. The fit of an artificial denture, a crown, an inlay, etc., can readily be seen, as the whole of the inside of the mouth is illuminated.

In the lower part of the Mirror there is fitted a powerful bull's eye, or magnifying lens, and behind this there is a small obscured glass electric lamp, which throws a powerful light through the lens into the open mouth of the patient, who is thereby enabled to examine clearly in the Mirror the interior of the mouth.

Fig. 1, shown in the illustration, is the best form. The metal work is highly finished and heavily electro-plated ; there is a neat fretwork design on the back mounted on dark leather, which shows through the open metal work. The handle is fitted with a switch which lights the lamp when it is pressed down by the grip of the hand.

No. 2 Mirror is of the same shape, size, and general finish as Fig. 1, but it is made with plain smooth metal back, and there is no switch on the handle.

The handles of both Mirrors are of good horn, which looks well side by side with the electro-plated metal.

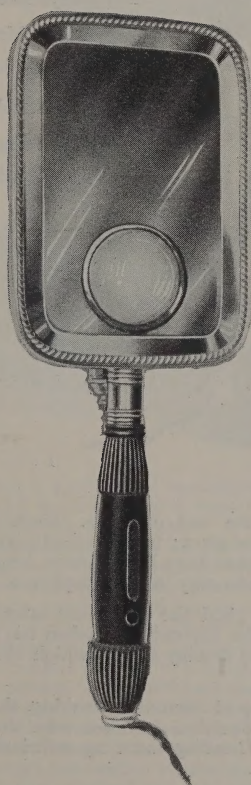
The Mirrors can be used from any wall-plug or ordinary lamp-socket.

		£	s.	d.
Fig. 1, complete with lamp and 2 yards flexible wire . . .	each	2	11	6
No. 2,	„	1	16	6
Extra Lamps, any voltage	each, 1s. 9d. ; three for	0	5	0
Lamp-Socket Plug fitted to wire	extra	0	1	6
Plug and Adapter to admit of the ordinary lighting lamp being used at the same time as the Mirror		0	4	0

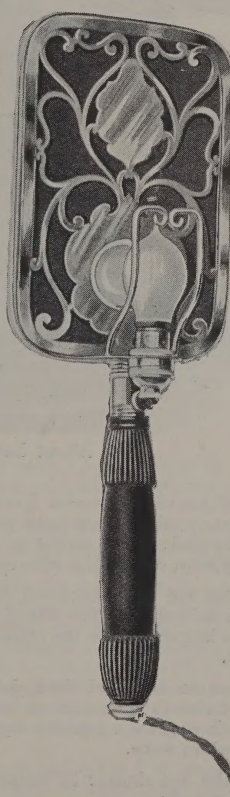
ELECTRIC HAND MIRRORS—*continued.*

(PATENTED.)

FIG. 1.



Front View.

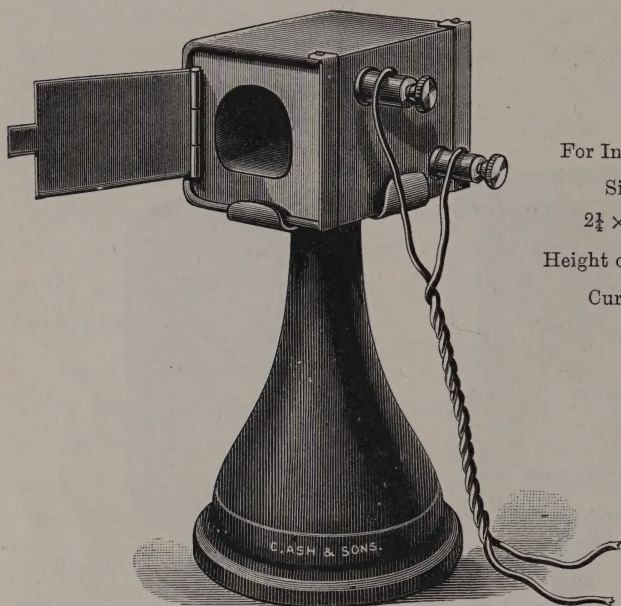


Back View.

MITCHELL'S ELECTRIC FURNACES,

FOR FUSING

MINERAL BODIES AND ENAMELS.



No. 1.

For Inlays and Crowns.

Size of Muffle,

 $2\frac{1}{4} \times \frac{7}{8} \times \frac{7}{8}$ inches.

Height on Stand, 6 inches.

Current absorbed,

200 watts.

About half-size.

These well-known Furnaces have stood the test of years. Since they were introduced many others have been put on the market; but Mitchell's still continue to have an extensive sale, owing to the fact that they have always been found to embody simplicity, durability, efficiency, and economy in consumption of current.

The muffles are so constructed that they yield the maximum amount of heat that can be obtained, in a few minutes after the current is switched on, starting all cold. This is largely due to the thinness of the fireclay around which the platinum wire is coiled.

In addition to saving of time and economy of current in working, the Furnaces are not so liable to burn-out as are those electrical furnaces with thick fireclay muffles, which require a heavier current for heating them up sufficiently for the firing of porcelain work.

Nos. 1 and 2 are similar in construction and use; they differ only in the size of the muffle and body.

The external metal casing of both Furnaces is nickel-plated, and thoroughly insulated from the terminals on the side and the internal wires. A door, hinged at the side, is fitted to each Furnace, which, when closed, ensures the muffle being heated up evenly all over.

MITCHELL'S ELECTRIC FURNACES—*continued.*

No. 2.

For Inlays, Crowns, and
Bridges.Size of Muffle,
 $2\frac{3}{8} \times 1\frac{1}{2} \times \frac{7}{8}$ inches.Height on Stand,
6 inches.With Door,
as in illustration of No. 1.Current absorbed,
250 watts.

About half-size.

The Stand is a solid iron casting with broad base, heavy enough to prevent the Furnaces being top-heavy; it is neatly enamelled, and may be placed on any convenient shelf, bench, or cabinet.

The Furnaces are supplied to work direct from any current supply up to 250 volts, and work equally well on either Alternating or Continuous current. No resistance is necessary, but the one shown on page 56 will be found advantageous, and is specially recommended for currents of 200 volts and upwards, where the risk of overheating is great. This small resistance reduces the strength of the current when first applied, allows the muffle to heat slowly, and gives time for the work to dry. It also reduces the risk of a burn-out, and prevents undue cracking and shrinking of the porcelain body. Different temperatures are obtainable with it, and the full strength of the current can be switched on to fuse the work as soon as it is required. The current can then be reduced to allow both the muffle and the work to cool down slowly, which increases the toughness of the body and minimises the risk of the wires breaking through too sudden contraction.

The **ordinary winding** will fuse Ash's, Jenkins', and other low-fusing bodies and enamels which fuse at temperatures below 1900° Fahr. or 1040° Cent. The Furnaces are also supplied wound for high-fusing bodies—Allen's, Close's, etc.—in which case the large resistance shown on page 58 is necessary. This is suitable for the Workroom, but a neater form can be had for the Operating Room which serves as a Stand for the Furnace.

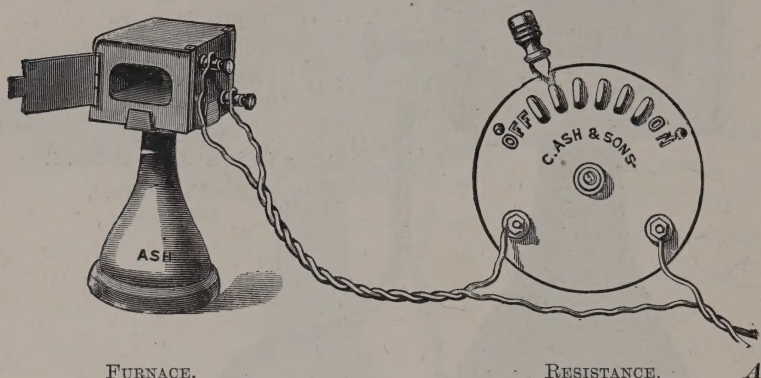
For Prices see page 57.

MITCHELL'S FURNACES—*continued.*

SMALL RESISTANCE

FOR MITCHELL'S Nos. 1 AND 2 FURNACES AND GOLD-ANNEALER.

ORDINARY WINDING ONLY.



The illustration shows the wires from the Resistance and the source of supply *A* connected to the Furnace.

The Resistance is of the well-known Iron and Enamel type, the main feature in which is the embedding of the wires in the enamel to prevent corrosion by exposure to the air.

Although outwardly all the Resistances of this form appear the same, they have different internal resistance and current capacity to suit the current required by Nos. 1 and 2 Furnaces and the different voltages used.

When employed in the Workroom the Resistance may be screwed firmly to the wall.

For the Operating Room either size Furnace can be had, as illustrated on page 57, where the Resistance is shown screwed to a polished wooden block with a uraltite heat-insulating disc between it and the block. An iron clip is fitted on the top of the Resistance in which the Furnace Stand is set. The Outfit as thus arranged is neat and portable, and may be placed on any bench, table, or cabinet without risk of damaging it.

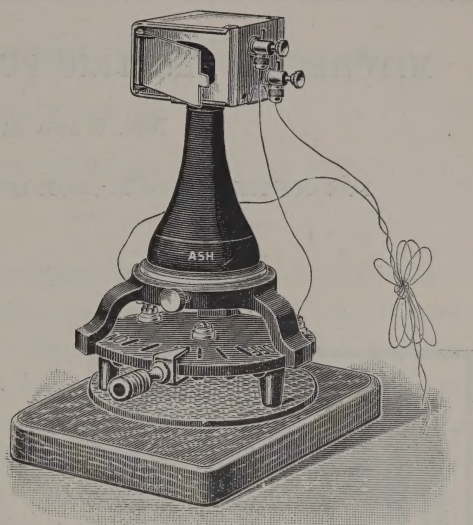
The handle of the Resistance should first be advanced to the second rib from "Off," as shown in the above illustration; at the end of about two minutes it should be advanced to the fourth rib; and, finally, to fuse the work thoroughly it should be advanced to the last rib at "On." After the fusing is completed it should be moved backwards towards "Off" in the same manner.

Each Furnace is supplied with instructions, nickel tray, one tin of Ash's Fine Investing Material, one tin of Kaolin for repairing cracks in the muffle, and five feet of flexible wire.

MITCHELL'S FURNACES—*continued.*

Illustration which shows No. 1 Furnace, with Resistance underneath, mounted on polished wooden block with disc of uralite between the block and the Resistance.

No. 2 Furnace can be had similarly mounted.



Mitchell's Furnace No. 1, complete with Stand, as on page 54, and accessories, ordinary winding, for any voltage from 100 to 250 volts	each	£	s.	d.
Mitchell's Furnace No. 2, as on page 55, with Stand, etc., for any voltage from 100 to 250 volts	each	2	11	6
Small circular Resistance only	extra	0	12	6
" " " with Iron Clip, Uralite Disc, and Wooden Block, as illustrated above	extra each	0	18	6
Mitchell's No. 1 Furnace wound for fusing Allen's Body, with Wall Resistance, as on page 58, for any voltage from 100 to 120 volts	each	4	18	0
" No. 1 " " " 200 to 250 " "	"	4	11	6
" " 2 " " " 100 to 120 " "	"	5	3	6
" " 2 " " " 200 to 250 " "	"	4	16	6

These No. 1 and No. 2 Furnaces wound for Allen's Body can be had fitted on a neat, special, portable combined Resistance and Stand for use in the Operating Room at an extra charge on the above prices of each 1 0 0

Parts separately :

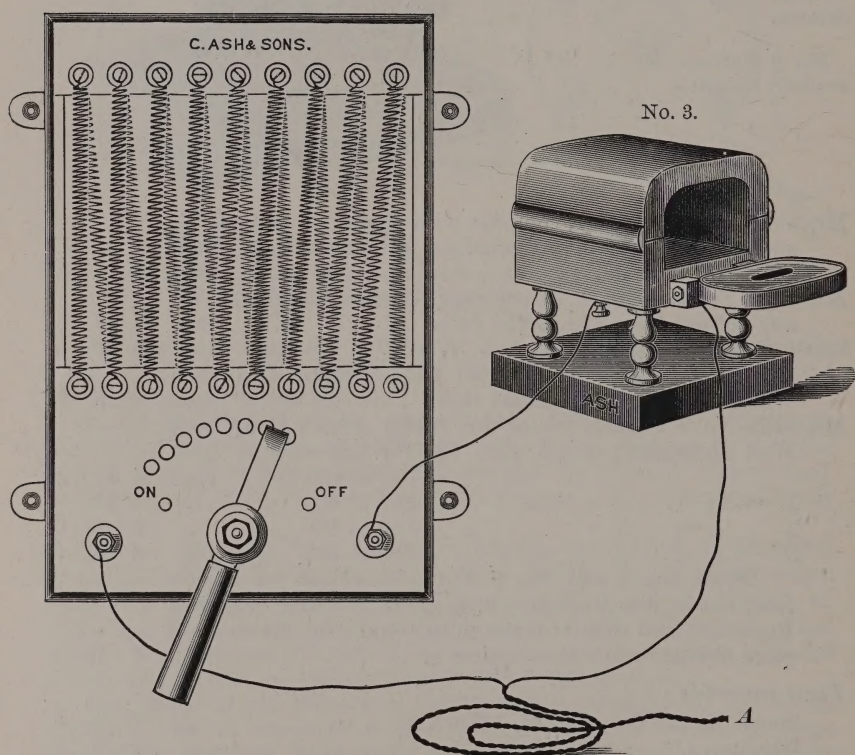
Small Nickel Tray for No. 1 Furnace	"	0	0	6
Medium " " " " 2 " "	"	0	0	9
Lamp-Socket Plug fitted to flexible wires	"	0	1	6
Tin of Kaolin for repairing muffles	"	0	0	9
" Ash's Fine Investing Material	"	0	0	9
Extra Furnace Body only, No. 1, ordinary winding	"	2	5	0
" " " " 2, " " " " "	"	2	10	0

In ordering any of the above Furnaces, be careful to state the voltage for which it is required.

MITCHELL'S ELECTRIC FURNACES—*continued.*

Nos. 3 AND 3A.

FOR CONTINUOUS-GUM SECTIONS AND FULL SETS.



Inside measurement of muffle : $3\frac{3}{4}$ inches long, 3 inches wide, and $1\frac{1}{8}$ inches deep.

A—Wires leading to source of supply.

The Resistance shown above must be screwed to a wall, and the flexible wires must be connected as shown in the illustration.

MITCHELL'S ELECTRIC FURNACES—*continued.*

NOS. 3 AND 3A.

FOR CONTINUOUS-GUM SECTIONS AND FULL SETS.

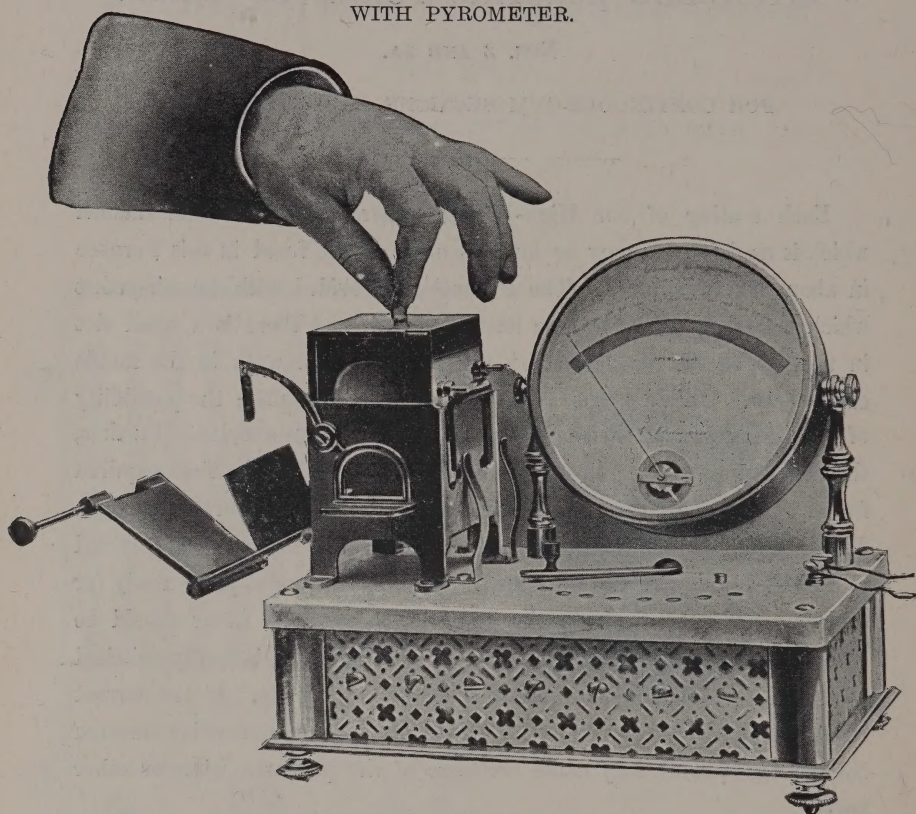
Each coating of our High-Fusing Mineral Body or Gum Enamel which is used for an upper or lower denture can be fused in this Furnace in about fifteen minutes. The Furnace is provided with an air-jacket which materially conserves the heat produced, and there is a small slot in the hinged lid through which every part of the work in the muffle can be seen. Uniform heat is produced all over the muffle; the possibility of fusing one part of the work before another is thus avoided. Further, the heat can always be got up at a fixed uniform rate; the time required for any particular class of work can therefore be very accurately gauged. The Resistance supplied with the Furnace permits of the heat being varied as desired, for drying the work, or for warming up metal plates ready for soldering, etc. After using the Furnace, the Switch Lever should be placed on the last contact for a few minutes before it is finally switched off. This will allow the Furnace to cool down gradually. If the current is suddenly switched off from full power, the sudden contraction through cooling too quickly may cause breakage of the platinum wires or other parts.

No. 3A. Large Furnace, similar to No. 3, but mounted on a Resistance which is enclosed in a neat metal frame with black enamelled slate top, the whole being portable.

	£	s.	d.
Fig. 3. Furnace with separate Wall Resistance and Wires . .	10	16	0
„ 3. „ wound for fusing Allen's and other High-Fusing Bodies	10	16	0
„ 3A. Furnace mounted on Resistance, ordinary winding .	12	0	0
„ 3A. „ wound for fusing Allen's and other High-Fusing Bodies	12	0	0

PLATSCHICK'S FURNACES.

WITH PYROMETER.



Front View of the Furnace with Pyrometer, which shows how the muffle is changed. When it is hot, it cannot be lifted out with the thumb and finger; it must be lifted out with a button-hook or other suitable instrument passed through the ring.

It is generally acknowledged that failure to obtain perfection in all porcelain work is very largely due to imperfect fusing of the body and gum enamel. Long practice and experience are necessary to gauge accurately the exact fusing point of the various makes of material in use.

The average porcelain worker has not time to do sufficient of this class of work to gain the necessary experience to form a correct judgment of the various fusing points, and the Pyrometer has therefore become a necessity in the fusing of porcelain.

The Platschick Furnace with Pyrometer has been specially designed to meet this need. The above illustration shows the No. 1 size Furnace, which is largely used for fusing inlays and crowns.

PLATSCHICK'S FURNACES—*continued.*

The Furnace is made in various useful sizes, from small for inlays, crowns, and small bridges, up to sizes large enough for full sets, and is put up with or without Pyrometer to suit the requirements of porcelain workers.

The Thermo-couple, which causes the needle of the Pyrometer to register the heat generated in the muffle, is permanently fixed in the centre of the back part of each muffle, and has two projections passing out at the back of the muffle, which fit into two short pillars fixed in an upright position behind the muffle case. Into these projections the couple-ends are firmly clamped; no flexible wires are used for the Pyrometer connections.

The Furnace case and the metal parts of the Pyrometer are neatly finished, nickel-plated, and fixed to a marble slab, under which resistance coils are arranged; and there is a regulating handle on the top, for regulating the current supply to the muffle: thus the heat can be slowly raised or lowered as desired.

The muffles are interchangeable, and can be changed in about two minutes. It is necessary for accurate fusing always to start each piece of work with a cold muffle, as the Pyrometer needle must be at zero before the firing is commenced.

Furnace No. 1 has a muffle 2.5 cm. wide, 2.25 cm. high, 4.75 cm. deep ($1 \times \frac{3}{4} \times 1\frac{7}{8}$ ins.).

Furnace No. 2 has a muffle 4 cm. wide, 3.2 cm. high, and 5 cm. deep ($1\frac{9}{16} \times 1\frac{1}{4} \times 2$ ins.).

Furnaces Nos. 3, 4, and 5 have larger size muffles than No. 2, for Continuous-Gum work; No. 5, for full sets, being the largest.

Nos. 6 and 7 have muffles the same sizes as Nos. 1 and 2. These two Furnaces are mounted on marble bases without Pyrometer and without regulating resistance.

MOST IMPORTANT.

The current must be switched off completely after the work is fired; on no account must the regulating handle be afterwards left on the last stud for more than 30 minutes.

PLATSCHICK'S FURNACES—*continued.*

No. 1, complete with regulating Resistance and Pyrometer, as illustrated, for 100 to 110 volts.	each	£	s.	d.
		16	16	0
No. 2, complete with regulating Resistance and Pyrometer, as illustrated, for 100 to 110 volts.	each	18	0	0
Either size for higher voltages.	extra	„	0	10
Extra Muffles only for No. 1, for 100 to 110 volts	„	5	0	0
„ „ „ „ for higher voltages	„	5	6	0
„ „ „ No. 2, for 100 to 110 volts	„	6	5	0
„ „ „ „ for higher voltages	„	6	12	0
No. 3, Small, for Continuous-Gum Work, complete with Pyrometer, for 100 to 110 volts	each	34	0	0
No. 3, Small, for Continuous-Gum Work, complete with Pyrometer, for higher voltages	each	35	5	0
No. 4, Medium, for Continuous-Gum Work, complete with Pyrometer, for 100 to 110 volts	each	36	10	0
No. 4, Medium, for Continuous-Gum Work, complete with Pyrometer, for higher voltages	each	38	0	0
(No. 4 is the most useful size for baking full sets.)				
No. 5, Large, for full sets of Continuous-Gum Work and for facial restorations	<i>Supplied to order</i>			
No. 6, same size as No. 1, but minus Pyrometer and regulating Resistance, for 100 to 110 volts	each	4	15	0
No. 6, same size as No. 1, but minus Pyrometer and regulating Resistance, for higher voltages	each	5	10	0
No. 7, same size as No. 2, but minus Pyrometer and regulating Resistance, for 100 to 110 volts	each	6	10	0
No. 7, same size as No. 2, but minus Pyrometer and regulating Resistance, for higher voltages	each	7	5	0
Fireclay for repairs	per bot.	0	1	0
„ Trays, large or small	each	0	1	0
Mica Squares for doors of Furnaces	per doz.	0	1	0

In ordering any of the above Furnaces, be careful to state the voltage for which it is required.

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NOVOCAIN.

For the painless extraction of teeth. One of the newest local
anæsthetics.

Absolutely non-irritant. Scientifically prepared.

Unattended by after-effects.

Prepared in Tablet form, and known as

DENTAL NOVOCAIN-SUPRARENIN TABLETS.

Put up in Tubes, 20 Tablets in each Tube.

							<i>s.</i>	<i>d.</i>
Per dozen tubes ...	...	...	...	...	...	...	18	0

The Tablets yield uniformly excellent results; a fresh, reliable solution can at all times be made from them; and they are giving the greatest satisfaction to all Dentists who are using them.

GUM BODIES AND ENAMELS.

Temperatures required for Baking the following Bodies, etc.:

	Degrees.	Degrees.
Ash's High-Fusing Body	1100 C. .	2012 F.
„ Gum Enamel, High-Fusing	1038 C. .	1900 F.
„ Low-Fusing Body	860 C. .	1580 F.
„ Gum Enamel, Low-Fusing	816 C. .	1500 F.
„ Porcelain Enamels	760 C. .	1400 F.
Allen's Gum Body	1282 C. .	2340 F.
Close's Gum Body	1253 C. .	2288 F.
Consolidated D.M. Co.'s Gum Body for Continuous-Gum Work	1204 C. .	2200 F.
Consolidated D.M. Co.'s Gum Body for Inlays.	1398 C. .	2548 F.
Jenkins' Porcelain (according to Hammond)	880 C. .	1616 F.
„ „ (according to LeCron)	860 C. .	1580 F.
„ Prosthetic Porcelain	816 C. .	1500 F.
Rose's Gum Body	1127 C. .	2060 F.
The S. S. W. D.M. Company's Body for Inlays	1234 C. .	2254 F.

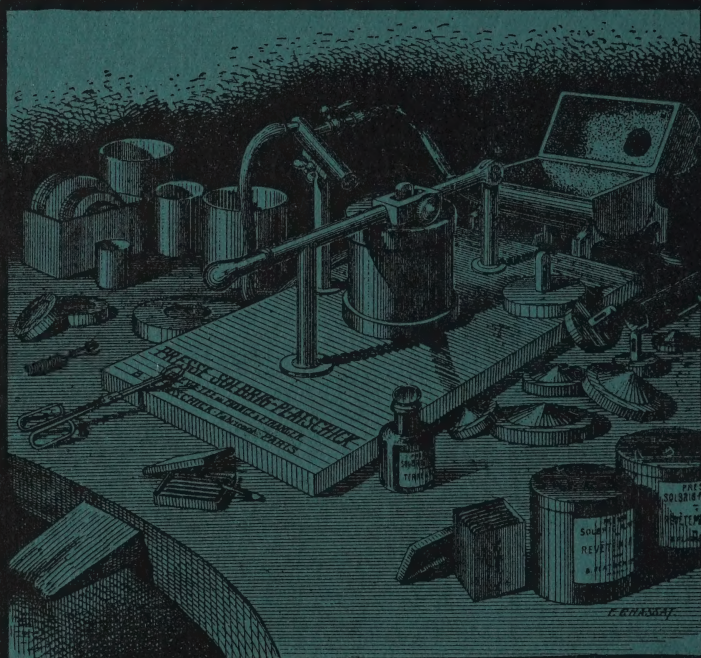
It is sometimes thought that in order to have a **strong** mineral body it is necessary to have it **very high-fusing**. This is a mistaken idea. The very high-fusing American bodies are of a relatively coarse texture, and by making a different composition of much more finely ground material it is possible to obtain the same strength in a lower-fusing body. Our high-fusing body is very strong—in fact, it is as strong as is ever needed for gum sections and continuous-gum pieces. This body and our high-fusing gum enamel can be fired both on English and American teeth, whereas the extremely high-fusing American bodies can only be fired on American teeth; this limits the range of their usefulness.

The body is made in a great number of shades, and these shades vary the colour of the gum if the gum enamel is put thinly on the body; consequently the Dentist can produce the shade he requires, instead of being limited to a few shades of body and a single pink shade of gum enamel.

To obtain the best results in porcelain work, it is important to note that the first firing of the body should only be carried far enough to solidify it; the contours should then be built up and the second firing carried to the **biscuit stage**, *i.e.*, the porcelain should be baked to a dense, but **not to a glazed surface**; the body should then be thinly coated with gum enamel and the piece should be fired until a nice glaze appears, *viz.*, up to a temperature of 1900° F. as indicated by the pyrometer.

SEND FOR BOOKLET ON
THE
SOLBRIG-PLATSCHICK
PRESS AND ACCESSORIES
FOR CASTING ALL KINDS OF METAL WORK

‘PATENTED IN FRANCE AND ABROAD’



—MANUFACTURED IN—

ENGLAND AND FRANCE

BY

Claudius ASH, Sons & Co., Ltd

5 to 12 Broad Street, Golden Square.

LONDON, W., ENGLAND.